

## A revision of some West Palaearctic species of *Scopaeus* Erichson (Coleoptera, Staphylinidae, Paederinae)

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**A revision of some West Palaearctic species of *Scopaeus* Erichson (Coleoptera, Staphylinidae, Paederinae).** - Four new species are described: *S. alaschiacus* and *S. flavofasciatus* from Cyprus, *S. palaestinus* from Israel and *S. hercegovinensis* from Bosnia-Herzegovina. Nine additional species are redefined, and four species names synonymised: *S. koestlinianus* Scheerpeltz = *S. gracilis* Sperk. *S. furcatus* Binaghi, *S. pampylicus* Coiffait = *S. minimus* Erichson. *S. baudrimonti* Coiffait = *S. ryei* Wollaston. *Scopaeus gracilis siculus* Binaghi and *S. micropterus championi* Binaghi are raised to species rank. The species are defined by external morphological, genital and meristic characters, and illustrated. Lectotypes are designated for *S. apicalis* Mulsant & Rey, *S. erichsoni* Kolenati, *S. micropterus* Fauvel, *S. minimus* Erichson, *S. ryei* Wollaston, *S. siculus* Binaghi and *S. trossulus* Wollaston.

**Key-words:** Staphylinidae - Paederinae - *Scopaeus* - West Palaearctic Region - taxonomy.

## INTRODUCTION

*Scopaeus* Erichson is a speciose group of the staphylinid subfamily Paederinae, comprising about 400 described species throughout the tropics, subtropics and temperate areas, of which 77 species are known from the West Palaearctic realm (FRISCH 1997b). The knowledge of numerous West Palaearctic species is poor, and a large number of distributional data is based on misidentifications, or is impossible to interpret because of confusion in the current taxonomic concept (e.g. BOHÁČ 1985; COIFFAIT 1984; LOHSE 1964). BINAGHI (1935) was the first to describe the aedeagi of most then known West Palaearctic *Scopaeus* species and he enabled the identification of many species, but failed to revise the relevant type material. COIFFAIT (1952, 1953, 1960, 1968, 1969, 1973, 1981) and SCHEERPELTZ (1970) produced a large number of ill-based names and made the identification of many species difficult. Some of these names have already been treated in FRISCH (1994, 1996, 1997a, b) and GUSAROV (1992, 1994, 1995).

An attempt is made to define females by the spermatheca and the female genital-sclerites (FRISCH 1996). However, it turned out that the shape of the spermatheca is rather variable within species, and the genital-sclerites are very similar in closely related species. These structures may define the species groups but often lack characters to diagnose the species. The present paper is a further contribution toward a revision of the West Palaearctic *Scopaeus*. It presents descriptions of 13 species, four of which are new, establishes four new synonymies, and gives ecological and distributional information. In addition, species groups are defined, and their distributional patterns are given.

## MATERIAL AND METHODS

This revision is based on type material and on additional material from significant collections. The type material of *S. gracilis* is not available. Detail data are given only for the type specimens. Under synonymy, only primary references are given. The material examined is from the following collections.

- BKCB = C. Brandstetter & A. Kapp Private Collections, Bürs
- BMNH = The Natural History Museum, London
- CMCB = C. Morkel Private Collection, Butzbach
- CUCU = Charkow University Collection, Ukraine
- DEIC = Deutsches Entomologisches Institut, Eberswalde
- HNHM = Hungarian Natural History Museum, Budapest
- HTCO = H. Terlutter Private Collection, Osnabrück
- IHUG = Steiermärkisches Landesmuseum Joanneum, Graz
- ISNB = Institut Royal des Sciences Naturelles de Belgique, Brussels
- JFCG = J. Frisch Private Collection, Gießen
- MCSN = Museo Civico di Storia Naturale, "Giacomo Doria", Genova
- MHNG = Muséum d'histoire naturelle, Genève
- MHNL = Musée Guimet d'histoire naturelle, Lyon
- MKCH = M. Kahlen Private Collection, Hall in Tirol
- MLZT = Museo di Zoologia Sistemica della Università, Turin
- MNHN = Muséum National d'Histoire Naturelle, Paris
- MSCB = M. Schülke Private Collection, Berlin
- MZLU = Zoological Museum, Lund
- NHMB = Naturhistorisches Museum, Basel
- NHMW = Naturhistorisches Museum, Wien
- NMPC = Národní Muzeum, Prague
- SMTD = Staatliches Museum für Tierkunde, Dresden
- TLMF = Tiroler Landesmuseum Ferdinandeum, Innsbruck
- UZIÜ = Universitets Zoologiska Institut, Uppsala
- VACH = V. Assing Private Collection, Hannover
- VGCB = V. Gollkowski Private Collection, Berlin
- ZMHB = Museum für Naturkunde, Berlin
- ZSMC = Zoologische Staatssammlung, München

The terminology of the aedeagus follows FRISCH (1994), the terminology of the spermatheca and the genital sclerites is used as in FRISCH (1996) and UHLIG (1989). The illustrations of male sternites 8 are without the fine primary setae. Abdominal sternites and tergites are counted from the first morphological segment.

Measurements and ratios are defined as follows: total length = interval from the apical margin of the mandibles to the end of the abdomen, pending on the state of the specimens; forebody length = interval from the apical margin of the mandibles to posterior margin of elytra at suture; length of head = interval from the apical margin of the clypeus to the posterior margin; HLW = head length : head width; PLW = pronotal length : pronotal width; HPW = width of head : pronotal width; HPL = length of head : pronotal length; PSL = pronotal length : elytral sutural length (excluding scutellum); PLL = pronotal length : elytral lateral length; ELW = elytral lateral length : elytral width; ET = eye length : temporal length (both measured laterally); MT = mesotibial length : mesotibial width; A = length (measured without the basal and distal tapering) : width of the antennal segments 1-11; T = length : width of the central area (between sclerite margins) of the tergite 10; V = length : width of the central area of the female valve. So far as available, ratios are based on ten specimens of both sexes at least, which are including maximum variation range in size and form.

## TAXONOMY

### *Scopaeus gracilis* (Sperk)

(Figs 1-3, 7-9, 15, 17, 19, 26-29)

*Xantholinus gracilis* Sperk, 1835: 152. South Russia, holotype missing.

*Scopaeus* (s. str.) *gracilis*; FAUVEL 1873a: 22; 1873b: 308.

*Scopaeus* (*Heteroscopaeus*) *gracilis*; COIFFAIT 1960: 259.

*Scopaeus* (*Anomoscopaeus*) *gracilis*; COIFFAIT 1968: 426.

*Scopaeus apicalis* Mulsant & Rey, 1854: 165; 1855: 53. Lectotype ♂, France, Rhône, Belleville-sur Saône (MHNL); here designated (examined); synonymised by KRAATZ 1857: 702.

*Scopaeus erichsoni* Kolenati, 1846: 23. Lectotype ♂, Azerbaijan, Gjandza (Elisabethopol), Kolenati (ZMHB); here designated (examined); synonymised by FAUVEL 1890: 39.

*Scopaeus erichsonis*; FAUVEL 1873a: 22; 1873b: 308.

*Scopaeus erichsonii*; MULSANT & REY 1877: 186.

*Scopaeus koestlinianus* Scheerpelz 1970: 76. Holotype ♂, Iran, Chalus, -20 m, 13.10.1967, Köstlin (NHMW); examined. **Syn. n.**

*Scopaeus trossulus* Wollaston, 1864: 585. Lectotype ♂, Canary Islands, Tenerife, Santa Cruz (BMNH); here designated (examined); synonymised by FAUVEL 1902: 85.

**DESCRIPTION.** Length 3.1-3.9 mm; forebody 1.5-2.2 mm. Specimens from Central Europe are usually larger than Mediterranean specimens. Colour variable. Central European specimens are dark brown with pronotum and elytra slightly lighter. Anterior half of pronotum and posterior margin and suture of elytra lighter yellowish-brown. Appendages light yellowish-brown, third segment of maxillary palpi and antennomeres 3-6 usually moderately darker. Mediterranean specimens are usually lighter and sometimes more contrasted, with pronotum and posterior margin of elytra yellowish-brown. Punctuation fine and dense, microsculpture indistinct. Surface

relatively mat, but pronotum shining with very fine and sparse puncturation. Head with parallel tempora, strongly round hind angles and straight posterior margin. Eyes length slightly exceeding half of temporal length. Elytra relatively long, lateral length usually exceeding pronotal length by a fifth, sutural length as pronotum or up to 0.1 times exceeding pronotal length. Metathoracic wings entire. Protarsomeres 1-4 in both sexes twice as wide as long. Mesotibia conspicuously slender, about seven times longer than wide. Antennae very slender with distal segments notably longer than wide, in Mediterranean specimens frequently shorter. Laterotergite 9 and tergite 10 as in *S. siculus* (figs 13, 23). Laterotergite 9 with obtuse dorsal dilatation and very slender distal tooth. Valve (fig. 19) very slender. Distal tenth of male sternite 8 (fig. 17) with broad, shallow emargination, straight in middle third. Aedeagus (figs 1-3, 7-9) with asymmetrical lobes. Apical lobes moderately sclerotized terminally, one apex obtusely round, second apex pointed. Dorsal lobe slender and curved at base in dorsal view, with dorsal margin more or less concave in lateral view. Apex of dorsal lobe hooked ventrally (figs 1-3), in specimens from South-West Europe and North Africa usually moderately sclerotized and less hook-shaped (figs 7-9). Ventral endophallic process with slender lateral spine at base, strongly curved toward apex of dorsal lobe. Phallobase with two ventral groups of long setae. Spermatheca (figs 27-29) variable in shape, with sclerotized ductus distinctly strong.

RATIOS. HLW 1.14-1.21; PLW 1.2-1.27; HPW 1.05-1.1; HPL 0.96-1.05; PS� 0.92-1.04; PLL 0.74-0.82; ELW 1.2-1.3; ET 0.63-0.68; MT 6.4-7.5; A (♂, South Tyrol) 2.9, 2.0, 2.1, 1.6, 1.5, 1.3, 1.3, 1.2, 1.2, 1.1, 2.1; A (♀, Tunisia) 2.7, 1.8, 1.9, 1.5, 1.4, 1.2, 1.1, 1.1, 1.1, 1.0, 1.8; T 2.1; V (♀) 6.4.

MATERIAL EXAMINED (565 specimens). Albania (NHMW). Algeria (NMPC). Austria: Burgenland (VACH); Carinthia (MHNG, NHMW); Lower Austria (NHMW); Tyrol (HTCO, JFCG, VACH, VGCB); Upper Austria (NHMW); Vienna (NHMW). Azerbaijan: lectotype ♂ and paralectotype ♀ of *S. erichsoni*, Gjandza (ZMBH). Bosnia-Herzegovina (HNHM, NHMW, SMTD). Bulgaria (ZMHB). Canary Islands: lectotype ♂ and paralectotypes 1♂, 1♀ of *S. trossulus*, Tenerife, Santa Cruz (BMNH); paralectotype ♂, Fuerteventura, La Antigua (BMNH); Gran Canaria (VACH); Tenerife (NHMW, UZIU). Croatia: Rijeka (NHMW). Cyprus (NHMW). Czech Republic: Jihomoravský Kraj (NHMW, SMTD); Praha (NHMW); Severomoravský Kraj (HNHM, NHMW, SMTD, ZMHB); Středočeský Kraj (NHMW). France: lectotype ♂ and paralectotypes 1♂, 1♀ of *S. apicalis*, Rhône, Belleville-sur-Saône (MHNH); Alpes Maritimes (MHNG, NHMW); Ardèche (MHNG); Corse-du-Sud (MHNG); Gers (NHMW); Haute-Corse (DEIC, ISNB, MHNG); Hautes-Pyrénées (BMNH, MHNG, NHMW); Hérault (NHMW); Pyrénées Orientales (MHNG); Var (MHNG); Vaucluse (HNHM, ISNB). Georgia: Abchasia (MHNG); Tbilisi (ZMHB). Germany: Bavaria (MHNG, ZMHB); Hesse (JFCG); Rhineland-Palatinate (ZMHB). Gibraltar (BMNH). Greece: Attiki (NHMW, NMPC); Crete (JFCG); Giona Oros (JFCG); Karpathos (JFCG); Khalkidhiki (VACH); Lemnos (BMNH); Naxos (JFCG); Parnassos Oros (JFCG); Peloponnese (JFCG, NHMW, VACH); Thessalia (NHMW). Hungary: Győr-Moson-Sopron (NHMW); Somogy (HNHM). Iran: holotype ♂ of *S. koestlinianus*, Chalus (NHMW). Italy: Campania (NHMW); Emilia-Romagna (ZMHB); Liguria (BMNH, MCSN, MHNG, NHMW, NMPC, ZMHB); Lombardia (MHNG); Piedmont (DEIC, HNHM, ISNB, MCSN, MHNG, NHMW); Sardinia (DEIC, MHNG, NHMW, VACH); Tuscany (VACH, ZMHB); Trentino-Alto Adige (JFCG); Veneto (DEIC, ISNB, NHMW). Macedonia (NHMW, ZMHB). Malta (BMNH). Morocco: Anti Atlas (MHNG). Poland: Bielsko-Biala (MHNG, NHMW, ZMHB); Legnica (NHMW, ZMHB). Portugal: Faro (ISNB); Viana do Castelo (MHNG). Romania: Bihor (NHMW); Bukovina



(NHMW); Caras-Severin (NHMW, ZMHB); Pasul Turnu Rosu (NHMW). Scotland: Dumfries-Galloway (BMNH); Grampian (BMNH). Slovakia: Západoslovenský Kraj (ZMHB). Spain: Andalucía (BMNH, ISNB, MHNG, NHMW, ZMHB); Castilla Mancha (BMNH); Catalunya (ISNB, ZMHB), Valencia (MHNG). Switzerland: Genève (MHNG, NHMW); Schwyz (NHMB); Ticino (MHNG); Vaud (MHNG). Syria: Aleppo (JFCG). Tunisia: El Kef (JFCG); Kasserine (JFCG); Kairouan (NHMW). Turkey: Adana (JFCG, NHMW); Antalya (ISNB); Giresun (JFCG); Hatay (NHMW); Izmir (NHMW); Kastamonu (JFCG); Kayseri (JFCG); Sivas (JFCG); Trabzon (JFCG); Yosgat (JFCG). Ukraine: Crimea (NHMW).

**DISTRIBUTION.** *Scopaeus gracilis* is a West Palaearctic species. It is common in Western, Southern and Central Europe, the Canary Islands, North-West Africa and Middle East. The species is known from the large Mediterranean islands, except from Sicily (CICERONI *et al.* 1995). The easternmost records are from South-West Poland, the Carpathians, the Crimea, Azerbaijan and North Iran. *Scopaeus gracilis* occurs in Scotland but appears absent from the North German lowland plain (HORION 1965) and Fennoscandia (LINDROTH 1960; PALM 1963; SILFVERBERG 1992).

**HABITAT.** *Scopaeus gracilis* is a ripicol-hygrophilous inhabitant of gravelly or sandy, denuded margins of rivers, streams, lakes and even secondary stretches of water such as ponds in gravel pits or brickworks (BOHÁČ 1985; KOCH 1989), occurring below stones and in gravel especially in damp areas close to the water. According to KAHLEN (1995), *S. gracilis* was found in Tyrol on wide riverbanks with coarse gravel. It prefers submountainous and mountainous regions (HORION 1965), but is found from sea-level (Mediterranean region) up to high-altitude valleys. It avoids slow running rivers and streams of lowlands with muddy or marshy banks and rich vegetation.

**COMMENTS.** SPERK (1835) described *Xantholinus breviventer* and *Xantholinus gracilis* from South Russia. *Xantholinus gracilis* was transferred to *Scopaeus* by FAUVEL (1873a, b). The type material of this species is not traceable in the Sperk collection (CUCU) (Kirejtschuk, pers. comm.), but the description is not contradictory to Fauvel's interpretation. *Xantholinus breviventer* was transferred to *Scopaeus* by GEMMINGER & HAROLD (1868) and synonymised with *S. erichsoni* by MARSEUL (1883). FAUVEL (1890) synonymised the latter with *S. gracilis*. I have examined the single type specimen (CUCU) and found *Xantholinus breviventer* to be a senior synonym of *Gabrius pennatus* Sharp (Staphylinidae, Staphylininae). This synonymy was published in SCHILLHAMMER (1997).

According to FAUVEL (1902), records of *S. sericans* from the Canary Islands (GEMMINGER & HAROLD 1869; FAUVEL 1873a, b) and Nord Africa (FAUVEL 1878) refer to *S. gracilis*. In BERNHAUER & SCHUBERT (1910) and MARSEUL (1883) *S. laevigatus* Heer is referred to as synonym of *S. gracilis*, although Heer has not described a species he named *S. laevigatus*, but he gave a redescription of *S. laevigatus* Gyllenhal (HEER 1839).

Specimens from the Canary Islands, North-West Africa, South Spain and Sardinia differ in the shape of the aedeagus with the dorsal lobe more strongly bent ventrally and the apex of the dorsal lobe moderately sclerotized and less hook-shaped (figs 7-9). Transition forms are found in northern Spain, Sardinia and the South of France.

**Scopaeus flavofasciatus** sp. n.

(Figs 4-6, 14, 16, 20, 22, 24)

DESCRIPTION. Similar to *S. gracilis* from which it differs as follows: Length 3.4-3.9 mm; forebody 1.8-2.1 mm. Colour lighter. Head and abdomen brown, elytra brown to dark brown with posterior third contrasting light yellowish-brown. Pronotum orange to light reddish-brown, beyond middle hardly darker. Third segment of maxillary palpi and antennomeres 3-6 not blackish but light yellowish-brown. Antennomeres notably shorter than in Central European and most Mediterranean specimens of *S. gracilis*. Laterotergite 9 (fig. 14) with dorsal dilatation much more obtuse. Posterior emargination of male sternite 8 (fig. 16) somewhat deeper. Shape of aedeagus (figs 4-6) as in *S. gracilis*, distinguished by dorsal lobe stronger hook-shaped at apex, with dorsal margin notably convex (concave in *S. gracilis*). Spermatheca as in fig. 24.

RATIOS. HLW 1.13-1.18; PLW 1.22-1.29; HPW 1.03-1.4; HPL 0.97-1.01; PSL 0.77-0.99; PLL 0.63-0.82; ELW 1.21-1.28; ET 0.63-0.69; MT 6.6-7.8; A 2.7, 1.7, 1.6, 1.4, 1.3, 1.3, 1.2, 1.1, 1.1, 1.1, 1.9; T 1.9; V (♀) 7.3.

MATERIAL EXAMINED. Holotype ♂, Cyprus: Vyzakia, Elaia River, 250 m, 17.03.1996, collected on a bank, Frisch (MHNG). Paratypes. 23♂, 29♀, same data as holotype (JFCG, MHNG). 2♀, Cyprus: Troodos Mts., Kato Amiantos, 800 m, 09.03.1996, Frisch (JFCG). 2♀, Cyprus: Troodos Mts., Diarizos River, Kelefos Bridge, 400 m, 07.03.1996, Frisch (JFCG). 7♂, 14♀, Cyprus: Troodos Mts., Agios Mamas, 450 m, 18.03.1996, Frisch, Morkel (CMCB, JFCG). 3♂, 5♀, Cyprus: Sarama, 250 m, 15.03.1996, Frisch (JFCG). 1♂, Cyprus: Kidasi, Diarizos River, 250 m, 06.03.1996, Frisch (JFCG).

HABITAT. *Scopaeus flavofasciatus* obviously occupies the same ecological niche as *S. gracilis*. The species was collected close to the water on wet, gravelly or sandy banks of both rivers and small streams.

COMMENTS. *Scopaeus flavofasciatus* is known only from the Troodos Mountains in the west of Cyprus, where it appears to replace *S. gracilis*. According to material examined, *S. gracilis* occurs on Cyprus, too.

**Scopaeus siculus** Binaghi stat. nov.

(Figs 10-12, 13, 18, 21, 23, 25)

*Scopaeus* (s. str.) *gracilis siculus* Binaghi, 1935: 92. Lectotype ♂, Italy, Sicily, Palermo, 20.04.1906, Doderò (MCSN, Doderò collection); here designated (examined).

*Scopaeus* (*Heteroscopaeus*) *gracilis siculus*; COIFFAIT 1973: 271.

*Scopaeus* (*Anomoscopaeus*) *gracilis siculus*; COIFFAIT 1984: 206.

DESCRIPTION. Similar to *S. gracilis* from which it differs as follows: Length 2.9-3.4 mm; forebody 2.0 mm. Body light brown, pronotum moderately lighter yellowish-brown, head and base of elytra slightly darker. Appendages yellowish-brown, antennomeres 3-4 hardly darker. Laterotergite 9 (fig. 13) and tergite 10 (fig. 23) as in *S. gracilis*, valve (fig. 21) much more slender. Distal sixth of sternite 8 in male (fig. 18) with broad, shallow emargination, moderately convex in middle third. Shape of aedeagus (figs 10-12) similar to that in *S. gracilis*, but lobes distinctly longer. Dorsal lobe more slender in dorsal view, not hook-shaped but truncate at apex in lateral view. Ventral endophallic flagellum strongly lengthened dorsally. Spermatheca (fig. 24) with sclerotized ductus conspicuously strong.

RATIOS. HLW 1.14-1.15; PLW 1.23-1.24; HPW 1.03-1.05; HPL 0.96-0.98; PSL 1.0-1.04; PLL 0.63-0.82; ELW 1.23-1.25; ET 0.66-0.68; MT 6.0; A 2.9, 1.6, 1.7, 1.4, 1.4, 1.4, 1.3, 1.1, 1.1, 1.2, 2.1; T 2.1; V (♀) 8.8.

MATERIAL EXAMINED (3 specimens). Italy: lectotype ♂ and paralectotypes 1♂, 1♀, Sicily, Palermo (MCSN).

DISTRIBUTION. *Scopaeus siculus* appears to replace *S. gracilis* in Sicily. It is recorded from South Italy (Calabria) as well (CICERONI *et al.* 1995; POGGI 1971). Records from Morocco (COIFFAIT 1973) refer to *S. gracilis*.

COMMENTS. According to BINAGHI (1935), *S. siculus* differs from *S. gracilis* by its larger body size and longer and denser elytral pubescence. These characters are not reliable. *Scopaeus siculus*, *S. gracilis* and *S. flavofasciatus* form a species group in the West Palaearctic, here named *S. gracilis* group, which is defined by the aedeagus having long and moderately sclerotized, asymmetrical apical lobes, a slender dorsal lobe, which is curved at the base, and a long, dorsally bent endophallic flagellum with a short, lateral spine at the base. These species share very finely punctate surfaces, long antennae with elongated segments, broad, shallow distal emarginations in male sternite 8, toothless dorsal margins of laterotergite 9, and spermathecae having a remarkably sclerotized ductus.

### ***Scopaeus micropterus* Fauvel**

(Figs 30-32, 47, 52, 57, 62, 67-69)

*Scopaeus (Polyodontus) micropterus* Fauvel, 1873a: 27; 1873b: 313. Lectotype ♂, Italy, Tuscany (MLZT); here designated (examined).

*Scopaeus (Euscopaeus) micropterus*; COIFFAIT 1960: 285.

*Scopaeus (Alloscopaeus) micropterus*; COIFFAIT 1984: 188.

DESCRIPTION. Length 2.9-3.1 mm; forebody 1.5-1.8 mm. Body unicolorously yellowish-brown, abdomen usually darker brown, appendages paler. Punctuation fine and dense, reticulation indistinct, pronotum somewhat shining with conspicuously fine and sparse punctuation. Head trapezoid, notably wider than pronotum, with tempora moderately enlarged, posterior margin slightly concave. Eyes very small, notably shorter than half length of tempora. Elytra short and slender, just as wide as head or frequently more slender. Lateral length as long as pronotum or slightly longer, along suture about 0.25 times shorter than pronotum. Metathoracic wings reduced, as long as elytra. Protarsomeres 1-4 in both sexes twice as wide as long. Mesotibia moderately thickened. Antennomeres 5-10 transverse. Laterotergite 9 (fig. 52) without dorsal dilatation, tergite 10 (fig. 57) with parallel margins. Sternite 8 in males (fig. 47) with equilateral-triangular emargination in distal fifth and with two shallow, elongated depressions, which are divided by a longitudinal elevation. Apical lobes of aedeagus (figs 30-32) with concave inner margins, regularly bent toward each other in dorsal view, and strongly narrowed toward apex in lateral view. Each in basal half with a ventral enlargement, which is strongly hooked toward phallobase in lateral view. Enlargements curved toward each other ventrally. Dorsal lobe deeply divided into two diverging processes, bearing ventral marginal denticles of unequal length. Endophallic flagellum projecting from phallobase and curved ventrally. Ventral



endophallic process subdiscoidal in lateral view. Lateral lobes prominent, each bearing an apical group of numerous, long setae. Spermatheca (figs 67-69) variable in shape, with process slender and chamber triangular.

RATIOS. HLW 1.03-1.11; PLW 1.17-1.25; HPW 1.05-1.15; HPL 0.93-1.03; PSL 1.13-1.27; PLL 0.91-1.0; ELW 1.08-1.22; ET 0.37-0.43; MT 5.0-6.1; A 2.1, 1.1, 1.1, 1.0, 0.9, 0.8, 0.8, 0.8, 0.9, 0.8, 1.5; T 1.9; V (♀) 6.8.

MATERIAL EXAMINED (40 specimens). Italy: Lectotype ♂, Tuscany (MLZT); Emilia-Romagna (NHMW, ZMHB); Lazio (DEIC); Liguria (ZMHB); Marche (SMTD, ZMHB); Tuscany (BMNH, MLZT, NMPC); Trentino-Alto Adige (TLMF, NHMW); Veneto (MHNG).

DISTRIBUTION. *Scopaeus micropterus* is distributed throughout North Italy, the Appennines (BINAGHI 1935; CICERONI *et al.* 1995; PORTA 1926) and in the Provence (Digne; COIFFAIT 1984). It is confirmed from South Tyrol (Bolzano; PEEZ & KAHLEN 1977) southwards to the Lazio region.

COMMENTS. According to FAUVEL (1873), the description of *Scopaeus micropterus* is based on a couple from the Baudi collection, but it remains doubtful, if Fauvel received the specimens or if he published a description given by Baudi. *Scopaeus micropterus* is absent from the Fauvel collection (ISNB), but in the Baudi collection (MLZT) are three males from the Tuscany (Daccordi, pers. comm.), which were examined, and of which one specimen is designated here as lectotype.

### ***Scopaeus championi* Binaghi stat. nov.**

(Figs 33-36, 48, 53, 58, 63, 72)

*Scopaeus* (*Polyodontus*) *micropterus championi* Binaghi, 1935: 103. Holotype ♂, Italy: Trentino-Alto Adige, Cortina d'Ampezzo, 1200 m, Champion (MCSN); examined.

*Scopaeus* (*Alloscopaeus*) *micropterus championi*; COIFFAIT 1984: 188.

*Scopaeus* spec. nov.; KAHLEN 1995: 23. SCHATZ 1996: 264.

DESCRIPTION. Length 2.8-3.1 mm; forebody 1.5-1.6 mm. Head brown, pronotum and elytra light brown to yellowish-brown, disc of elytra except humeral callus, posterior sixth and suture usually darker. Abdomen blackish, appendages light yellowish-brown. Puncturation and reticulation as in *S. micropterus*. Head with moderately widened tempora and almost straight posterior margin. Eyes half or almost half of temporal length. Elytra relatively short and slender, lateral length about 1.1 times as long as pronotum, sutural length up to 0.2 times shorter than pronotum. Elytra as wide as head width or slightly wider. Metathoracic wings entire. Protarsomeres 1-4 in both sexes twice as wide as long. Mesotibia notably widened. Antennomeres 6-10 notably transverse. Terminal sclerites (figs 53, 58, 63) as in *S. micropterus*. Sternite 8 in male (fig. 48) with triangular emargination in distal seventh, lacking longitudinal depressions and elevated midline. Shape of aedeagus (figs 33-36) similar to that in *S. micropterus*. Apical lobes with inner margins parallel in dorsal view and ventral margins less hook-shaped in lateral view. Dorsal lobe deeply divided into two diverging processes of half length of apical lobes. Processes widening and round toward apex, studded with minute denticles at apex. Endophallus with thin spine pointing ventrally. Lateral lobes prominent, each having a group of few, long setae. Process of spermatheca (fig. 72) very slender, chamber triangular.



RATIOS. HLW 1.07-1.11; PLW 1.15-1.24; HPW 1.08-1.14; HPL 0.95-1.05; PSL 1.0-1.22; PLL 0.82-0.94; ELW 1.16-1.24; ET 0.44-0.52; MT 4.6-5.3; A 2.5, 1.5, 1.3, 1.2, 1.1, 1.0, 0.9, 0.9, 0.8, 0.8, 1.8; T 1.6; V (♀) 6.7.

MATERIAL EXAMINED (59 specimens). Austria: Styria, Admont (NHMW); Tyrol, Lech Valley, Forchach (BKCB, HTCO, JFCG, MHNG, MSCB, VACH, VGCB); Tyrol, Karwendel Mts., Rißtal (MKCH). Bosnia-Herzegovina: Sarajevo (HNHM, NMPC, SMTD). Italy: holotype ♂, Trentino-Alto Adige, Cortina d'Ampezzo (MCSN). Romania: Transsylvanian Alps, Pasul Turnu Rosu (NHMW).

DISTRIBUTION. *Scopaeus championi* is distributed in mountain regions of eastern Central Europe and South-East Europe. Examined material is from the Eastern Alps, the Southern Carpathians and the mountains in Bosnia. The record from Bolzano (PEEZ & KAHLEN 1977) refers to *S. micropterus*.

HABITAT. *Scopaeus championi* is a mountainous, thermo-hygrophilous inhabitant of sandy to gravelly, damp riversides, which was found between 800-1200 m above sea-level. As KAHLEN (1995) and SCHATZ (1996), the author collected this species in May on the Tyrolean Lech river below stones on a large, damp bank with gravel and fine sand, associated with *S. ryei* Wollaston.

### *Scopaeus alaschiacus* sp. n.

(Figs 37-39, 49, 54, 59, 64, 70)

DESCRIPTION. Similar to *S. championi* from which it differs as follows: Length 3.0-3.2 mm; forebody 1.6 mm. Body unicolorously light yellowish-brown, appendages slightly paler. Tempora notably widened, head trapezoid, about 0.15 times wider than elytra. Posterior margin of head strongly concave with two distinct, medio-longitudinal ridges divided by a median groove. Eyes conspicuously small, slightly longer than a third of temporal length. Elytra very short and slender with humeral callus notably obtuse, lateral length about the same length as pronotum, sutural length about a quarter shorter than latter. Metathoracic wings reduced to elytral length. Protarsomeres 1-4 in both sexes twice as wide as long. Mesotibia slender. Terminal sclerites (figs 54, 59, 64) similar to those in *S. championi* and *S. micropterus*, sternit 8 of male (fig. 49) distinguished by deeper and more narrow triangular emargination in distal sixth. Aedeagus (figs 37-39) with ventral margins of apical lobes narrowed continuously toward apex, forming a right angle at base in lateral view. Dorsal lobe divided into two diverging, very slender processes of half length of apical lobes, which are curved ventrally and hook-shaped bent toward each other at apex. Ventral endophallic process triangular in lateral view. Spermatheca as in fig. 70.

RATIOS. HLW 1.06-1.12; PLW 1.16-1.23; HPW 1.11-1.19; HPL 1.02-1.1; PSL 1.18-1.28; PLL 0.93-1.0; ELW 1.1-1.17; ET 0.35-0.38; MT 5.4-6.4; A 2.4, 1.6, 1.4, 1.4, 1.1, 1.0, 0.9, 0.9, 0.9, 0.9, 1.6; T 1.8; V (♀) 5.3.

MATERIAL EXAMINED. Holotype ♂, Cyprus: Troodos Mts., Kannaviou, Ezousa River, 350 m. 10.03.1996, collected on a damp, gravelly bank beneath stones, Frisch (MHNG). Paratypes. 38 ♂, 47 ♀, same data as holotype, Frisch, Morkel (CMCB, JFCG, MHNG).

COMMENTS. *Scopaeus alaschiacus* shares the shape of the body with short and slender elytra, and the shape of the aedeagus with *S. micropterus* and *S. championi*. These

species are linked by the dorsal lobe of the aedeagus deeply divided into two strongly diverging processes, and appear closely related.

**Scopaeus minutoides** Coiffait

(Figs 43-46, 50, 56, 60, 66, 71)

*Scopaeus (Alloscopaeus) minutoides* Coiffait, 1969: 33. Holotype ♂, Turkey, Antalya, Alanya, Dim Irmak, 06.1968, Fagel (ISNB); examined.

DESCRIPTION. Length 2.8-3.2 mm; forebody 1.5-1.8 mm. Body unicolorously reddish-brown to dark brown, or pronotum slightly lighter. Abdomen blackish, appendages yellowish-brown. Punctuation clear, head and pronotum shining with indistinct reticulation. Distal half of pronotum with median groove. Head trapezoid, tempora notably enlarged with well marked hind angles, posterior margin of head straight or slightly concave. Eyes as long as half of tempora or slightly shorter. Elytra relatively short, lateral length slightly longer than pronotal length, sutural length up to 0.17 times shorter than latter. Metathoracic wings reduced, twice as long as elytra. Protarsomeres 1-4 in both sexes twice as wide as long. Mesotibia moderately thickened. Antennae relatively slender, distal segments transverse. Dorsal margin of laterotergite 9 (fig. 56) with very obtuse dilatation, apical denticle relatively short. Distal fifth of male sternite 8 (fig. 50) with a triangular emargination. Apical lobes of aedeagus (figs 43-46) long and slender, narrowed gradually toward apex, with obtuse proximal margins in lateral view. Apical lobes with lateral contours parallel, but shortly narrowed toward apex in dorsal view. Dorsal lobe very slender with distal half deeply separated into two parallel spines. Ventral endophallic process semicircular. Lateral lobes distinctly prominent, each with an apical group of long setae. Spermatheca as in fig. 71.

RATIOS. HLW 1.11-1.13; PLW 1.18-1.25; HPW 1.09-1.12; HPL 0.99-1.05; PSL 1.11-1.17; PLL 0.91-0.99; ELW 1.16-1.19; ET 0.43-0.5; MT 4.7-5.4; A 2.4, 1.3, 1.5, 1.1, 1.2, 1.1, 0.9, 0.9, 0.9, 0.9, 1.8; T 2.0; V (♀) 5.3.

MATERIAL EXAMINED (6 specimens). Turkey: holotype ♂, Antalya, Alanya, Dim Irmak (ISNB); Antalya (VACH); Burdur (MHNG); Istanbul (BMNH).

DISTRIBUTION. *Scopaeus minutoides* is known only from West and South-West Anatolia.

COMMENTS. The aedeagal features of *S. minutoides* indicate close relationship with *S. gladifer* Binaghi (figs 40-42, 51, 55, 61, 65, 73), which is distributed around the Black Sea (Bulgaria, Romania, Turkey: Sivas, Ukraine, Russia: Samara). *Scopaeus gladifer* differs mainly by its larger size and the aedeagus (figs 40-42) with the apical lobes larger and strongly hooked toward the phallobase in lateral view, with the dorsal lobe longer and more slender, and with shorter setae on the lateral lobes. The dorsal dilatation of the laterotergite 9 (fig. 55) is stronger than in *S. minutoides*. The spermatheca (fig. 73) is wider and more arcuate. *Scopaeus minutoides* and *S. gladifer* are also linked with *S. micropterus*, *S. championi* and *S. alaschiacus* in having the dorsal lobe of the aedeagus long and deeply divided into two slender processes. *Scopaeus micropterus*, *S. championi* and *S. alaschiacus* differ drastically in having those processes strongly diverging at base. These five species form the *S. micropterus* group, restricted to southern Central Europe, Italy, South-East Europe, Anatolia and Cyprus.

***Scopaeus minimus* (Erichson)**

(Figs 74-76, 93, 94, 98, 101, 106)

*Lathrobium minimum* Erichson, 1839: 511. Lectotype ♂, Germany, Berlin, Erichson (ZMHB); here designated (examined).

*Scopaeus minimus*; ERICHSON 1840: 607.

*Scopaeus (Polyodontus) minimus*; FAUVEL 1873a: 26; 1873b: 312.

*Scopaeus (Polyodontus) furcatus* Binaghi, 1935: 102. Holotype ♂, Croatia, Rijeka, 30.03.1923, Schatzmayr (MCSN, Dodero collection); examined. **Syn. n.**

*Scopaeus (Hyposcopaeus) furcatus*; COIFFAIT 1960: 285.

*Scopaeus (Hyposcopaeus) pamphylicus* COIFFAIT, 1969: 36. Holotype ♂, Turkey, Antalya, 05.1968, Fagel (ISNB); examined. **Syn. n.**

**DESCRIPTION.** Length 2.3-2.6 mm; forebody 1.3-1.4 mm. Body uniformly brown to dark brown, abdomen blackish, pronotum sometimes slightly lighter. Hind margin of elytra and posterior half of suture usually lighter brown. Appendages brown with third segment of maxillary palpi distinctly darker. Specimens from Anatolia are lighter brown with appendages pale yellowish-brown and disc of elytra and abdomen blackish. Puncturation distinct, reticulation indistinct, forebody notably shining. Head relatively slender, almost 1.1 times as wide as pronotum, with slightly enlarged tempora and round hind angles, posterior margin straight or slightly convex. Eyes about half as long as tempora, in Anatolian specimens somewhat shorter. Length of elytra variable, depending on state of metathoracic wings, which are entire or reduced up to double of elytral length in European specimens, in Anatolian specimens only as long as elytra. Elytra laterally slightly exceeding pronotal length, or in specimens with entire metathoracic wings exceeding pronotal length by almost a quarter. Sutural length up to 0.14 times smaller or slightly exceeding pronotal length. Elytra of Anatolian specimens shorter, laterally as long as pronotum or slightly longer, at suture up to 0.3 times shorter than pronotum. Protarsomeres 1-4 in both sexes twice as wide as long. Mesotibia notably widened. Distal antennomeres transverse. Laterotergite 9 (fig. 94) with strong dorsal tooth. Tergite 10 (fig. 98) relatively slender. Male sternite 8 (fig. 93) with wide triangular emargination in distal fourth. Apical lobes of aedeagus (figs 74-76) strongly arcuate ventrally, with long, truncate apices, which are pointing longitudinally and curved toward each other in ventral view. Dorsal lobe almost right-angled bent ventrally and divided into two long spines, which are pointing proximally toward phallobase. Endophallic flagellum projecting over apical lobes. Ventral endophallic process semicircular in lateral view. Lateral lobes prominent, each bearing a group of long setae. Spermatheca (fig. 106) with distinctly elongated chamber, projecting over distal hook. Sclerotized ductus inserted distally.

**RATIOS.** HLW 1.12-1.2; PLW 1.15-1.22; HPW 1.04-1.11; HPL 1.02-1.07; PSL 0.93-1.14 (Anatolia: 1.17-1.31); PLL 0.77-0.93 (Anatolia: 0.95-1.0); ELW 1.1-1.25; ET 0.47-0.52 (Anatolia: 0.41-0.45); MT 4.6-5.7; A 2.0, 1.1, 1.2, 1.0, 1.0, 0.9, 0.9, 0.8, 0.8, 0.8, 1.9; T 2.1; V (♀) 6.2.

**MATERIAL EXAMINED** (430 specimens). Austria: Burgenland (JFCG, MHNG, MZLU, NHMW, NMPC, SMTD, VACH); Lower Austria (NHMW); Styria (IHUG). Bulgaria: Blagoevgrad (ZMHB); Varna (NMPC). Croatia: holotype ♂ of *S. furcatus*, Rijeka (MCSN). Czech Republic: Jihočeský Kraj (NMPC); Jihoomoravský Kraj (HNHM, ZMHB); Středočeský Kraj (NHMW, NMPC). France: Alpes Maritimes (NMPC). Germany: lectotype ♂ and paralect-



totypes 2♂, 1♀, Berlin (ZMHB); Brandenburg (MSCB, ZMHB); Lower Saxony (VACH); Mecklenburg-West Pomerania (ZMHB); Rhineland-Palatinate (NHMW); Saxony (SMTD); Saxony-Anhalt (ZMHB); Schleswig-Holstein (MHNG); Thuringia (ZMHB). Greece: Thessaloniki (DEIC). Hungary: Csongrád (HNHM); Fejér (HNHM); Győr-Moson-Sopron (HNHM, MHNG, NHMW, SMTD, ZMHB); Nograd (HNHM); Pécs (HNHM, NHMW); Szabolcs-Szatmár-Bereg (HNHM). Italy: Emilia-Romagna (ZMHB); Piedmont (MLZT); Tuscany (SMTD); Trentino-Alto Adige (MHNG, NHMW, ZSMC); Veneto (MHNG, NHMW). Macedonia (NHMW). Poland: Wrocław (NHMW). Serbia (SMTD). Slovakia (MHNG). Turkey: holotype ♂ of *S. pamphylicus*, Antalya (ISNB); Adıyaman (MHNG); Antalya (MHNG); Hatay (MHNG); Isparta (MHNG); Istanbul (MHNG); Kayseri (MHNG); Samsun (MHNG). Ukraine: Crimea (NHMW).

**DISTRIBUTION.** *Scopaeus minimus* is widespread throughout Central Europe, South-East Europe and Anatolia. It is confirmed as far west as the North of Germany (Schleswig-Holstein), Rhineland-Palatinate (Rhine Valley), South Tyrol and South-East France (Alpes Maritimes). The record from the Netherlands (BRAKMAN 1966) is doubtful and refers probably to *S. ryei*. Southward, *S. minimus* reaches the Tuscany, North Greece and Southern Anatolia. The known distribution in Eastern Europe has many gaps between West Poland, Slovakia, Crimea and Anatolia (Samsun, Kayseri, Hatay). The record from the Caucasus (HOCHHUTH 1849) is doubtful, as no material has been examined from the Caucasian regions. *Scopaeus minimus* is absent from western Europe. Records from Corsica and Sardinia (HORION 1965; PORTA 1926; SAINTE-CLAIRE DEVILLE 1906) refer possibly to *S. brevicuspis*, and records from the Canary Islands (BERNHAEUER & SCHUBERT 1910; HERNÁNDEZ et al. 1994) to *S. nigellus*. Data from North Africa (FAUVEL 1878), the Balearic Islands and Portugal (HORION 1965) are based obviously on misidentifications.

**HABITAT.** According to BOHÁČ (1985), HORION (1965) and KOCH (1989), *S. minimus* is a very hygrophilous, paludicol-humicolous species and distinguished from most *Scopaeus* species in that it inhabits marshy grounds such as wet meadows, swamps, bogs and even woods, where it is found in wet moss and litter. *Scopaeus minimus* obviously avoids mountainous regions and occurs preferentially in plains and marshlands.

**COMMENTS.** BINAGHI (1935) misinterpreted *S. minimus* and used the name for *S. ryei* Wollaston. Subsequent authors (e.g. BOHÁČ 1985; COIFFAIT 1968, 1984; LOHSE 1964; LOHSE & LUCHT 1989) followed him. Prior to BINAGHI's publication (1935), the name *S. minimus* was used correctly by KRAATZ (1857) and REDTENBACHER (1849, 1874), while keys in REITTER (1909), GANGLBAUER (1895) and FAUVEL (1873a, b) obviously refer to *S. ryei*. Thus, older records are not reliable, even though records of *S. ryei* from North Germany and Poland certainly refer to *S. minimus*. Specimens from Anatolia differ by lighter colour and shorter elytra, but are conspecific by shape of aedeagus. *Scopaeus nigellus* Wollaston, 1864, based on a single female from Gomera, was examined by the author. It was certainly incorrectly synonymised with *S. minimus* by FAUVEL (1902), although its male characters are still unknown.

### ***Scopaeus palaestinus* sp. n.**

(Figs 77-79, 92, 95, 99, 102, 107, 108)

**DESCRIPTION.** Similar to *S. minimus* from which it may be distinguished as follows: Length 2.6-3.0 mm; forebody 1.5 mm. Body somewhat larger. Forebody brown, disc



or only base of elytra darker, abdomen blackish. Appendages light brown. Eyes larger, as long as tempora or slightly longer. Elytra frequently somewhat longer, lateral length exceeding pronotal length by a fifth, sutural length as pronotal length. Metathoracic wings entire. Terminal sclerites (figs 95, 99, 102) and male sternite 8 (fig. 92) similar to those in *S. minimus*. Aedeagus (figs 77-79) more robust. Dorsal margins of apical lobes regularly arcuate, nearly semicircular, apices distinctly shorter than those in *S. minimus*, somewhat widened and less curved longitudinally. Spermatheca (figs 107, 108) as in *S. minimus*, with elongated chamber and sclerotized ductus inserted distally.

RATIOS. HLW 1.13-1.18; PLW 1.2-1.26; HPW 1.06-1.13; HPL 1.0-1.05; PSL 0.95-1.02; PLL 0.79-0.81; ELW 1.13-1.22; ET 0.5-0.55; MT 4.6-5.6; A 2.2, 1.3, 1.2, 1.2, 1.0, 0.9, 0.8, 0.8, 0.8, 0.8, 1.7; T 2.0; V (♀) 6.5.

MATERIAL EXAMINED. Holotype ♂, Israel: Galilee, Hula, 25.04.1982, Besuchet, Löbl (MHNG). Paratypes. 2♂, 4♀, same data as holotype (JFCG, MHNG).

COMMENTS. *Scopaeus minimus* and *S. palaestinus* may be distinguished from other species by the characteristic shape of the aedeagus, of which the dorsal lobe is right-angled bent ventrally in the basal portion and divided into two long spines, which are pointing proximally toward the phallobase, and by the spermatheca having a distinctly elongated chamber and a sclerotized ductus inserted distally. Both species are placed in the *S. minimus* group, which is distributed in Central Europe, South-East Europe, Anatolia and in Middle East.

### **Scopaeus ryei** Wollaston

(Figs 80-82, 89, 97, 100, 103, 109)

*Scopaeus ryei* Wollaston, 1872: 34. Lectotype ♂, England, Devon, Slapton Ley, Wollaston (BMNH); here designated (examined).

*Scopaeus (Hyposcopaeus) ryei*; COIFFAIT 1968: 419.

*Scopaeus (Stilpon) baudrimonti* Coiffait, 1952: 6. Holotype ♀, France, Hautes-Pyrénées, Pragnères, 16.04.1945, Tempère (MNH); examined. **Syn. n.**

*Scopaeus (Polyodontus) jarrigei* Coiffait, 1953: 267. Holotype ♂, France, Indre, Chateauroux, 1939, Coiffait (MNH); examined; synonymised by COIFFAIT 1968: 419.

*Scopaeus (Hyposcopaeus) jarrigei*; COIFFAIT 1960: 285.

*Scopaeus (Polyodontus) minimus forcipis* Ochs, 1954: 65. Holotype ♂, France, Alpes Maritimes, Pré du Lac, 03.12.1947, Ochs (MHNG); examined; synonymised by COIFFAIT 1968: 419.

DESCRIPTION. Length 2.5-2.9 mm; forebody 1.3-1.5 mm. Body yellowish-brown to brown, disc of elytra sometimes slightly darker. Abdomen light brown to dark brown, appendages light yellowish-brown. Surface dull, head and pronotum with dense reticulation, puncturation very fine and dense, notably coarser on elytra. Tempora slightly enlarged, head with strongly rounded hind angles and straight posterior margin. Eyes very small, 0.40-0.47 of temporal length. Pronotum relatively slender, 0.23 up to 0.30 times longer than wide. Elytral lateral length up to 1.2 times as long as pronotal length, sutural length about a tenth shorter than latter. Metathoracic wings entire. Protarsomeres 1-4 conspicuously slender, in both sexes slightly wider than long. Mesotibia moderately enlarged, about 5-6 times as long as wide. Laterotergite 9

(fig. 97) with strong dorsal tooth. Tergite 10 (fig. 100) and valve (fig. 103) relatively slender. Posterior margin of male sternite 8 (fig. 89) with very shallow, arcuate emargination in distal 1/4 and smooth postero-median area surrounded by median pointing setae. Aedeagus (figs 80-82) large and robust with bloated phallobase. Apical lobes distinctly shortened and slender, less than half as long as dorsal lobe, and pointing ventrally. Dorsal lobe deeply divided into two processes with basal portions bent ventrally, and distal halves widened and pointing longitudinally. Lateral lobes prominent and also orientated ventrally, each with a group of numerous, long setae. Ventral endophallic process in distal half deeply divided into two spines, which are right-angled bent distally in lateral view. A long flagellar spine reaching apex of apical lobes. Spermatheca as in fig. 109.

RATIOS. HLW 1.13-1.2; PLW 1.23-1.3; HPW 1.09-1.2; HPL 1.02-1.09; PSL 0.95-1.14; PLL 0.79-0.93; ELW 1.13-1.24; ET 0.4-0.47; MT 5.0-6.1; A 2.2, 1.2, 1.3, 1.2, 1.1, 1.0, 0.8, 0.8, 0.9, 0.9, 1.6; T 2.0; V (♀) 6.2.

MATERIAL EXAMINED (380 specimens). Austria: Burgenland (MKCH, NHMW, SMTD); Carinthia (MHNG); Tyrol (BKCB, TLMF, JFCG, MKCH, MSCB, NHMW); Upper Austria (NHMW); Vienna (NHMW); Vorarlberg (NHMW). Bosnia-Herzegovina (NHMW, SMTD, VACH). Czech Republic: Jihomoravský Kraj (HNHM, NHMW, NMPC); Severomoravský Kraj (NHMW). England: lectotype ♂, Devon, Slapton Ley (BMNH). France: holotype ♂ of *S. jarrogei*, Indre, Chateauroux (MNHN); holotype ♂ of *S. minimus forcipis*, Alpes Maritimes, Pré du Lac (MHNG); holotype ♀ of *S. baudrimonti*, Hautes-Pyrénées, Pragnères (MNHN); Bouches-du-Rhône (MHNG); Gers (ISNB); Haute-Saône (MHNG); Rhône (NHMW); Var (DEIC, MHNG); Vaucluse (HNHM); Vienne (NHMW). Germany: Bavaria (ZMHB, ZSMC); Hesse (VACH). Hungary: Győr-Moson-Sopron (MHNG). Italy: Emilia Romagna (ZMHB); Friuli-Venezia Giulia (MKCH); Lombardia (NHMW); Piedmont (MCSN); Trentino-Alto Adige (TLMF, JFCG, MHNG, MKCH, MSCB, NHMW, SMTD). Poland: Bielsko-Biala (ZMHB). Romania: Caras-Severin (HNHM). Slovakia: Stredoslovenský Kraj (NHMW, SMTD). Spain: Aragon (NHMW). Switzerland: Bern (JFCG); Fribourg (MHNG); Genève (MHNG); Valais (TLMF).

DISTRIBUTION. *Scopaeus ryei* is an European species distributed from South England (Devon, type locality) throughout France, Switzerland, Central and South Germany and Austria southwards to North-East Spain (Aragon), the Abruzzese Mountains (BINAGHI 1935) and Bosnia-Herzegovina. Easternmost data are from South Poland, Slovakia and West Romania. The record from Denmark (JOHANSEN 1914), overtaken by PALM (1963) and SILFVERBERG (1992), is doubtful.

HABITAT. *Scopaeus ryei* is a thermo-hygrophilous inhabitant of damp, sandy margins of rivers, streams or lakes with gravel and poor vegetation (BOHÁČ 1985; SCHATZ 1996). It occurs also in secondary biotopes such as gravel pits (PEEZ & KAHLEN 1977). British authors (EDMONDS 1931; HYMAN & PARSON 1994) recorded the species from coastal shingle.

COMMENTS. *Scopaeus ryei* was first mistaken for *S. minimus* by NEWBERRY (1914), followed by BINAGHI (1935), who described the aedeagus, and subsequent authors (e.g. BOHÁČ 1985; COIFFAIT 1968, 1984; LOHSE 1964; LOHSE & LUCHT 1989). Thus, the data in HORION (1965) on *S. minimus* refer rather to *S. ryei*. FOWLER (1888) hold *S. ryei* for *S. rubidus*, restricted to South-West Europe, and HEYDEN *et al.* (1906)

synonymised it with *S. minutus*. EDMONDS (1931) revalidated *S. ryei*. The confusion grew when OCHS (1954) described *S. minimus forcipis* based on a male of which the apical lobes of the aedeagus are bent out of shape and running longitudinally along the phallobase. COIFFAIT (1968) synonymised this name with *S. ryei*, but later (COIFFAIT 1984) distinguished falsely *S. ryei* with longer apical lobes, which in fact are bent out of shape, and *S. minimus* with undamaged aedeagus. Obviously, COIFFAIT (1984) illustrated the damaged aedeagus of *S. minimus forcipis*, which he falsely identified as that of *S. ryei*. BOHÁČ (1985) and LOHSE & LUCHT (1989) followed COIFFAIT (1984). See also comments under *S. minimus*.

### ***Scopaeus brevicuspis* Binaghi**

(Figs 83-85, 90, 104, 110)

*Scopaeus* (*Polyodontus*) *brevicuspis* Binaghi, 1935: 102. Holotype ♂, Italy, Sardinia, Cagliari, 03.06.1901, Doderò (MCSN); examined.

*Scopaeus* (*Hyposcopaeus*) *brevicuspis*; COIFFAIT 1960: 285.

DESCRIPTION. Length 2.5-2.9 mm; forebody 1.4-1.6 mm. Body brown, pronotum sometimes slightly lighter, elytra, except hind margin and posterior half of suture, darker, abdomen blackish. Appendages brown. Forebody notably shining, punctuation relatively fine and dense, reticulation indistinct. Head with slightly enlarged tempora, strongly rounded hind angles and straight posterior margin. Eyes about as long as tempora. Elytra relatively long, lateral length exceeding pronotal length by a tenth up to a quarter, sutural length slightly exceeding latter, or up to a tenth shorter. Metathoracic wings entire. Protarsomeres 1-4 in both sexes twice as wide as long. Mesotibia relatively slender. Antennomeres slender, not wider than long, except slightly transverse segment 10. Laterotergite 9 as in *S. littoralis* (fig. 96), with strong dorsal tooth. Valve (fig. 104) relatively slender. Sternite 8 in male (fig. 90) with triangular emargination in distal sixth with lateral margins moderately convex. Aedeagus (figs 83-85) with apical lobes broad and distinctly shortened, only a third as long as dorsal lobe, truncate in lateral view, each bearing a lateral group of long setae. Dorsal lobe deeply divided, almost right-angled bent ventrally, gradually widened toward apex and truncate apically, ventro-proximal angle bearing a short dent. Lateral lobes short, truncate, pointing ventrally, each with a group of long setae. Ventral endophallic process hook-shaped, but evenly arcuate longitudinally, slender and carved at apex in ventral view. Endophallic flagellum extended far over dorsal lobe. Process of spermatheca (fig. 110) slender and bent at apex, chamber triangular.

RATIOS. HLW 1.12-1.2; PLW 1.16-1.28; HPW 1.04-1.11; HPL 1.0-1.05; PSL 0.93-1.16; PLL 0.75-0.89; ELW 1.17-1.25; ET 0.48-0.57; MT 5.3-5.9; A 2.1, 1.4, 1.3, 1.3, 1.2, 1.2, 1.0, 1.0, 1.0, 0.9, 1.6; T 1.9; V (♀) 6.8.

MATERIAL EXAMINED (46 specimens). Algeria: Annaba (MHNG). France: Corse-du-Sud (DEIC, HNHM); Haute-Corse (DEIC, MHNG). Italy: holotype ♂, Sardinia, Cagliari (MCSN); paratypes 1 ♂, 1 ♀, Sicily, Pachino (MCSN); Sardinia (MHNG, NHMW, SMTD); Sicily (NHMW).

DISTRIBUTION. *Scopaeus brevicuspis* occurs in the West Mediterranean region. Examined material is from Corsica, Sardinia, Sicily and Algeria. According to BINAGHI (1935), it occurs also in Tunisia. The record of *S. minimus* from Corsica and Sardinia (PORTA 1926) refers obviously to *S. brevicuspis*.



**Scopaeus littoralis** Ochs

(Figs 86-88, 91, 96, 105, 111)

*Scopaeus (Polyodontus) littoralis* Ochs, 1958: 276. Holotype ♂, France, Var, St. Aygulf, 11.1957, Ochs (MHNG); examined.

*Scopaeus (Hyposcopaeus) littoralis*; COIFFAIT 1960: 285.

DESCRIPTION. Length 2.4-2.9 mm; forebody 1.3-1.4 mm. Body light brown to brown, abdomen and elytra, except humeral callus, hind margin and posterior half of suture, dark brown or blackish, appendages light brown. Forebody shining, lacking reticulation, puncturation clear. Head and pronotum relatively slender. Head with slightly enlarged tempora, strongly rounded hind angles and straight posterior margin. Eyes half as long as tempora or somewhat shorter. Elytral lateral length exceeding pronotal length by a fifth, sutural length as pronotal length or up to a tenth shorter. Mesothoracic wings entire. Protarsomeres 1-4 slender, in both sexes almost twice as wide as long. Mesotibia notably enlarged, about five times longer than wide. Dorsal margin of laterotergite 9 (fig. 96) with strong dorsal tooth, valve relatively slender (fig. 105). Sternite 8 in male (fig. 91) as in *S. brevicuspis* (fig. 90), but triangular emargination with proximal angle more obtuse. Aedeagus (figs 86-88) with short, slender apical lobes, which are pointing ventrally, truncate at apex and bent toward each other in ventral view. Dorsal lobe projecting far over apical lobes, deeply divided into two ventrally curved processes by a nearly semicircular incision. Processes each at apex enlarged into a right-angled distal projection and a long proximal hook. Endophallic flagellum extended far over dorsal lobe. Lateral lobes strongly reduced, each bearing a group of short setae, which is pointing ventrally. Phallobase with an additional, median group of few setae. Ventral endophallic process reduced to two short portions. Spermatheca (fig. 111) small, with strongly curved, slender portions.

RATIOS. HLW 1.14-1.22; PLW 1.24-1.29; HPW 1.07-1.18; HPL 1.0-1.12; PSL 1.0-1.11; PLL 0.79-0.86; ELW 1.15-1.23; ET 0.45-0.5; MT 4.5-5.4; A 2.3, 1.2, 1.4, 1.1, 1.0, 1.0, 0.9, 0.9, 0.9, 0.9, 1.7; T 1.9; V (♀) 6.8.

MATERIAL EXAMINED (16 specimens). France: holotype ♂ and paratypes 4♂, 8♀, Var, St. Aygulf (MHNG); Gard (MHNG); Var (JFCG, MHNG).

DISTRIBUTION. The distribution pattern of *Scopaeus littoralis* is unknown. The presumed West Mediterranean species is confirmed only from Var and Gard in South France.

COMMENTS. *Scopaeus ryei*, *S. brevicuspis* and *S. littoralis* share characteristic external and aedeagal features and are combined as *S. ryei* group, which occurs in Central Europe, Western Europe and in the western Mediterranean region. Members of the *S. ryei* group may be distinguished by the aedeagus having reduced, ventrally bent apical lobes and a remarkable dorsal lobe, which is deeply divided and of which processes are also pointing in ventral direction. The aedeagus is furthermore featured by ventrally orientated lateral lobes with long setae and by a long endophallic flagellum, which is projecting far over dorsal lobe. The species of the *S. ryei* group are also linked in having slender protarsomeres, which are less widened than in most *Scopaeus* species, and share a slender head with slightly widened tempora and strongly rounded posterior angles. Judging from external and aedeagal features, the West Mediterranean *S. portai* Luze, which was redescribed in FRISCH (1997b), is included as well. The species is distinguished by the lobes of the aedeagus, which are not bent ventrally.



***Scopaeus hercegovinensis* sp. n.**

(Figs 112-115)

**DESCRIPTION.** Length 3.2 mm; forebody 1.9 mm. Body brown, elytra in apical half gradually lighter, abdomen blackish, appendages light brown. Punctuation fine and distinct, reticulation indistinct. Head broad, almost as long as wide, with slightly enlarged tempora and straight posterior margin. Eyes relatively large, notably exceeding half length of tempora. Elytral lateral length exceeding pronotal length by almost a fifth, elytral suture as long as pronotum. Metathoracic wings entire. Protarsomeres 1-4 more than twice as wide as long. Mesotibia slender. Apical fourth of male sternite 8 (fig. 115) with triangular emargination. Aedeagus with characters as in *S. heinzi* subgroup (FRISCH 1994). Apical lobes gradually widening toward apex, with truncate apices and slightly concave ventral margins, bearing minute setae in proximal half. Apical lobes very slender with parallel outer margins and shortly arcuate apices in dorsal view, widening toward apex in ventral view. Dorsal lobe relatively broad and parallel, reaching apex of apical lobes and bearing a long spine bent ventrally in a right angle. Ventral endophallic flagellum longitudinal.

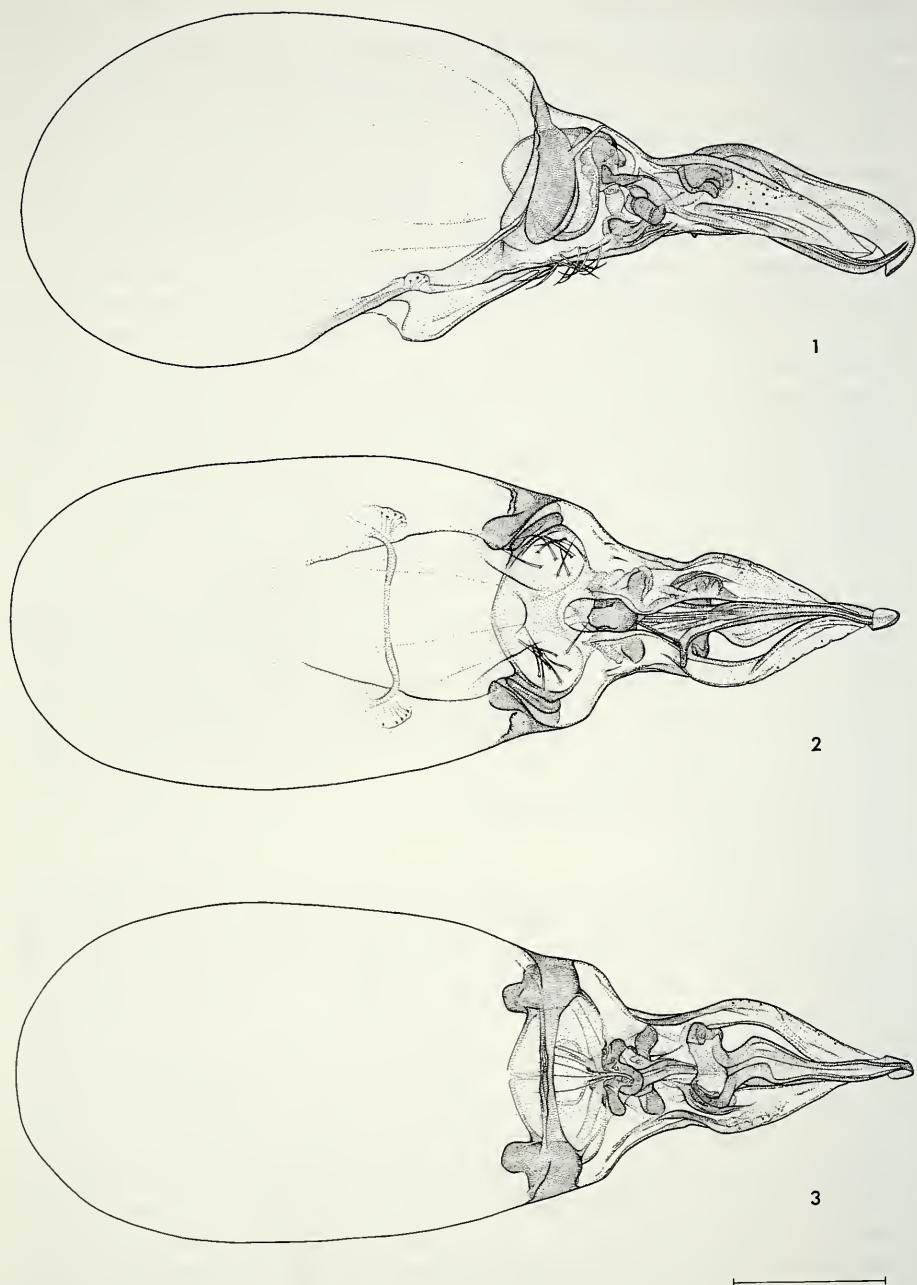
**RATIOS.** HLW 1.06; PLW 1.21; HPW 1.14; HPL 1.0; PSL 1.0; PLL 0.81; ELW 1.23; ET 0.56; A 2.0, 1.3, 1.5, 1.2, 0.1, 1.0, 0.9, 0.9, 0.8, 0.9, 1.7.

**MATERIAL EXAMINED.** Holotype ♂, Bosnia-Hercegovina: Jablanica (SMTD).

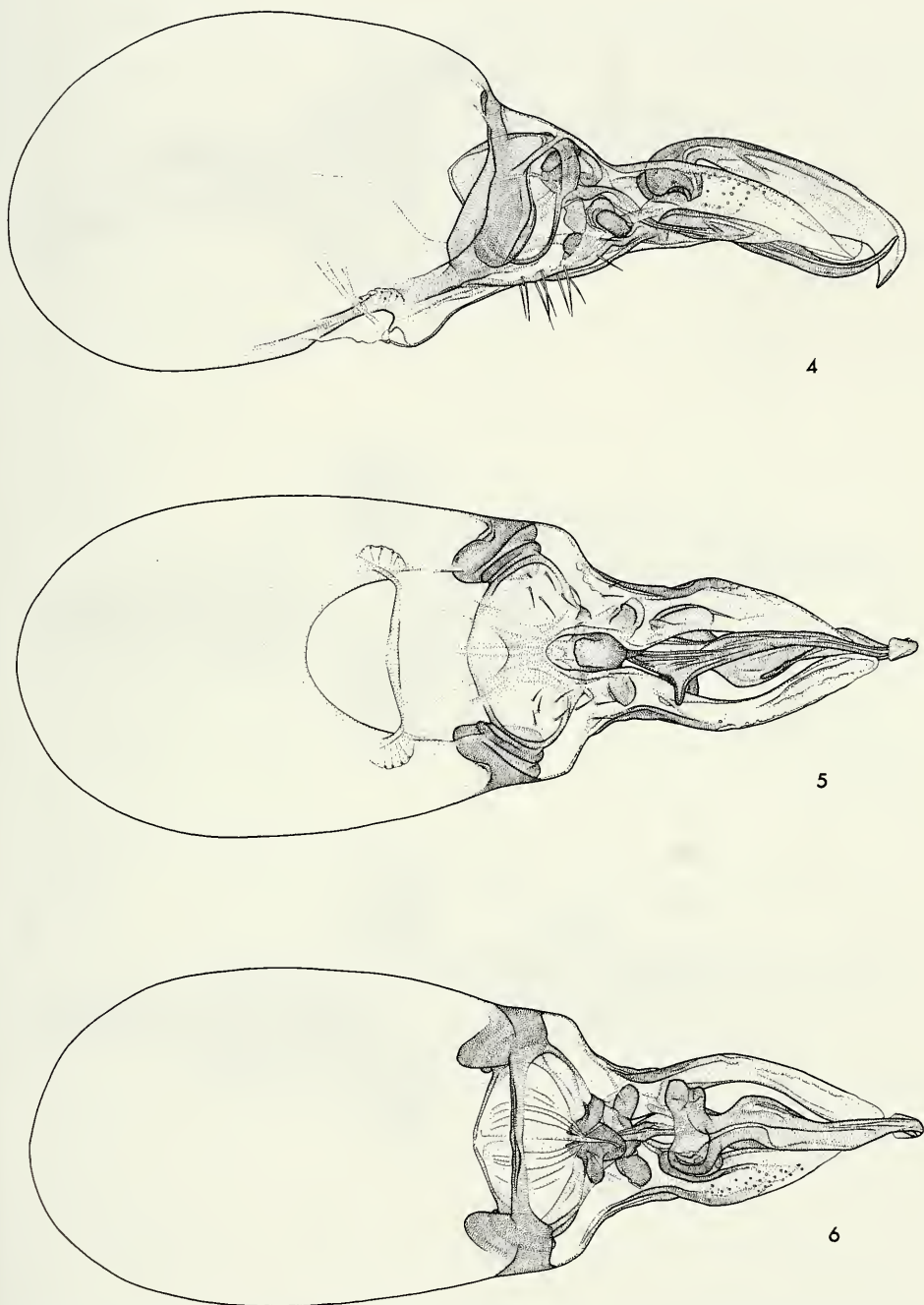
**COMMENTS.** The aedeagal features of *S. hercegovinensis* fit those of the *S. heinzi* subgroup as defined by FRISCH (1994). *Scopaeus hercegovinensis* is very close to *S. haemusensis* Frisch (figs 116, 117) from Bulgaria and *S. graecus* Frisch from Greece and Dalmatia (FRISCH 1994), but is unique in having a one-spined dorsal lobe. *Scopaeus graecus* may be easily distinguished by the three-spined dorsal lobe, and *S. haemusensis* may be distinguished in having a two-spined dorsal lobe and strongly convex ventral margins of the apical lobes.

**ACKNOWLEDGEMENTS**

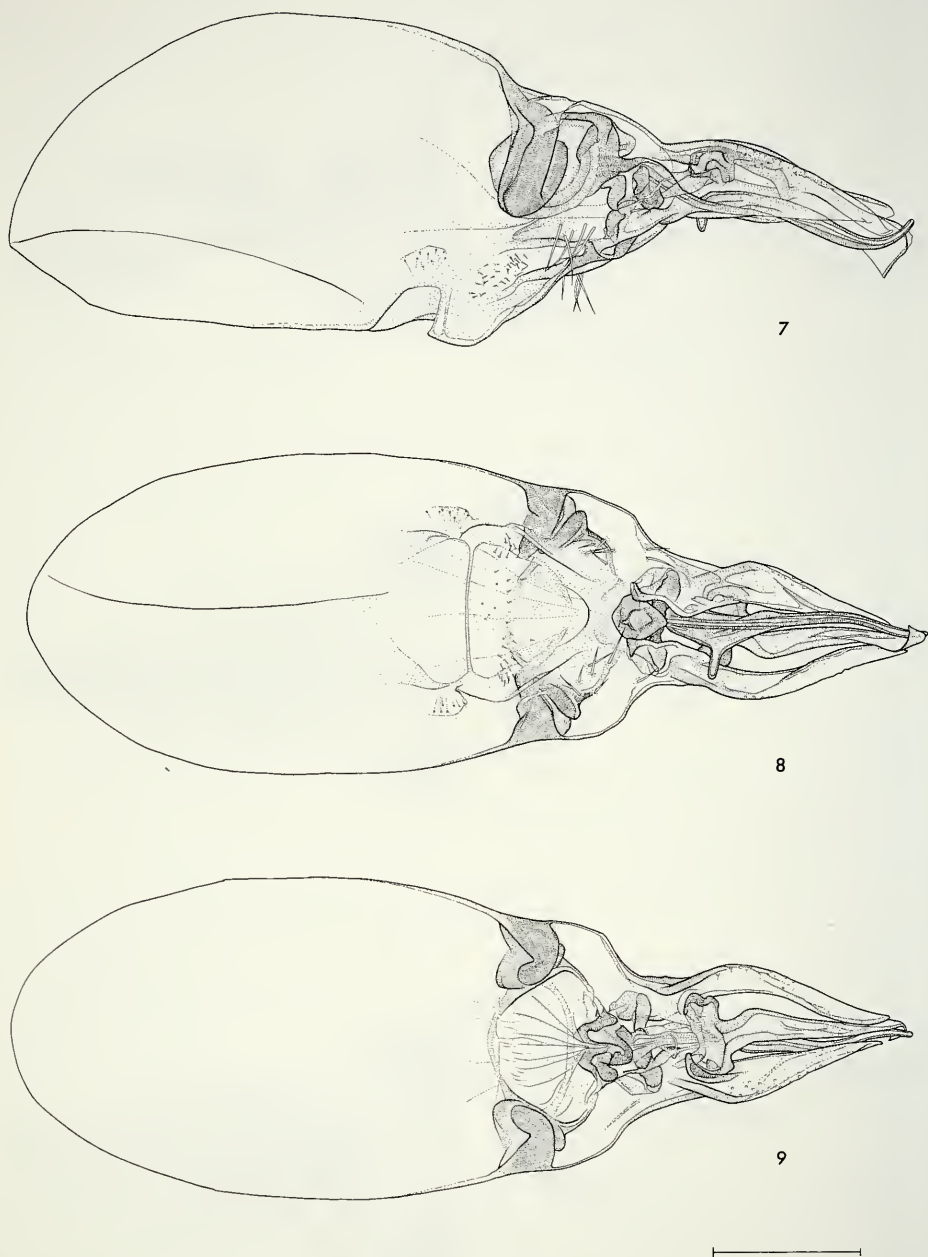
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FIGS 1-3. *Scopaeus gracilis*, ♂, Greece, Peloponnese: aedeagus in 1) lateral, 2) ventral, 3) dorsal view. Scale bar = 0.1 mm.



FIGS 4-6. *Scopaeus flavofasciatus*, ♂ holotype: aedeagus in 4) lateral, 5) ventral, 6) dorsal view. Scale bar = 0.1 mm.

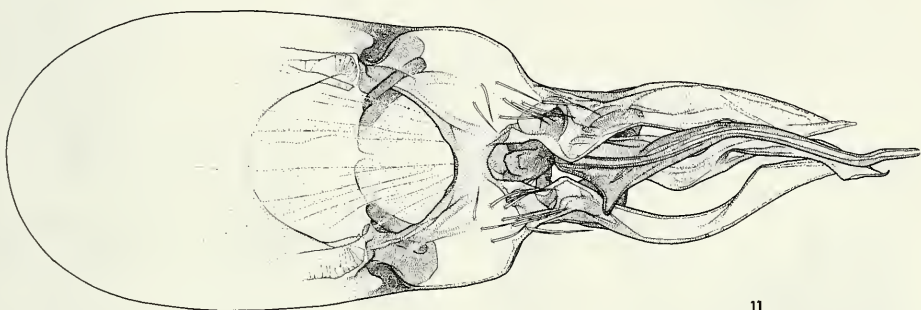


FIGS 7-9. *Scopaeus gracilis*, ♂ lectotype of *S. trossulus*: aedeagus in 7) lateral, 8) ventral, 9) dorsal view. Scale bar = 0.1 mm.

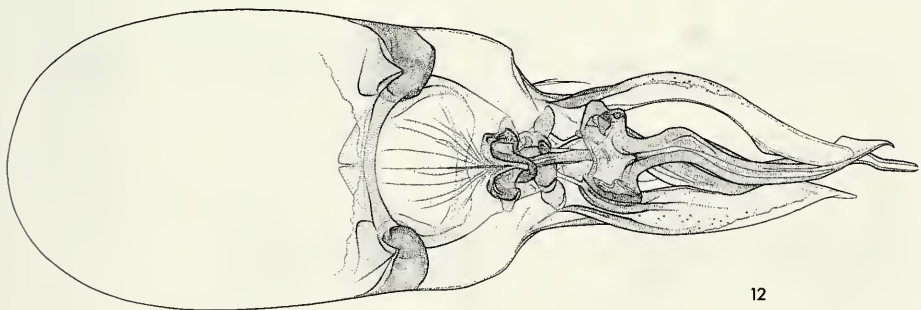




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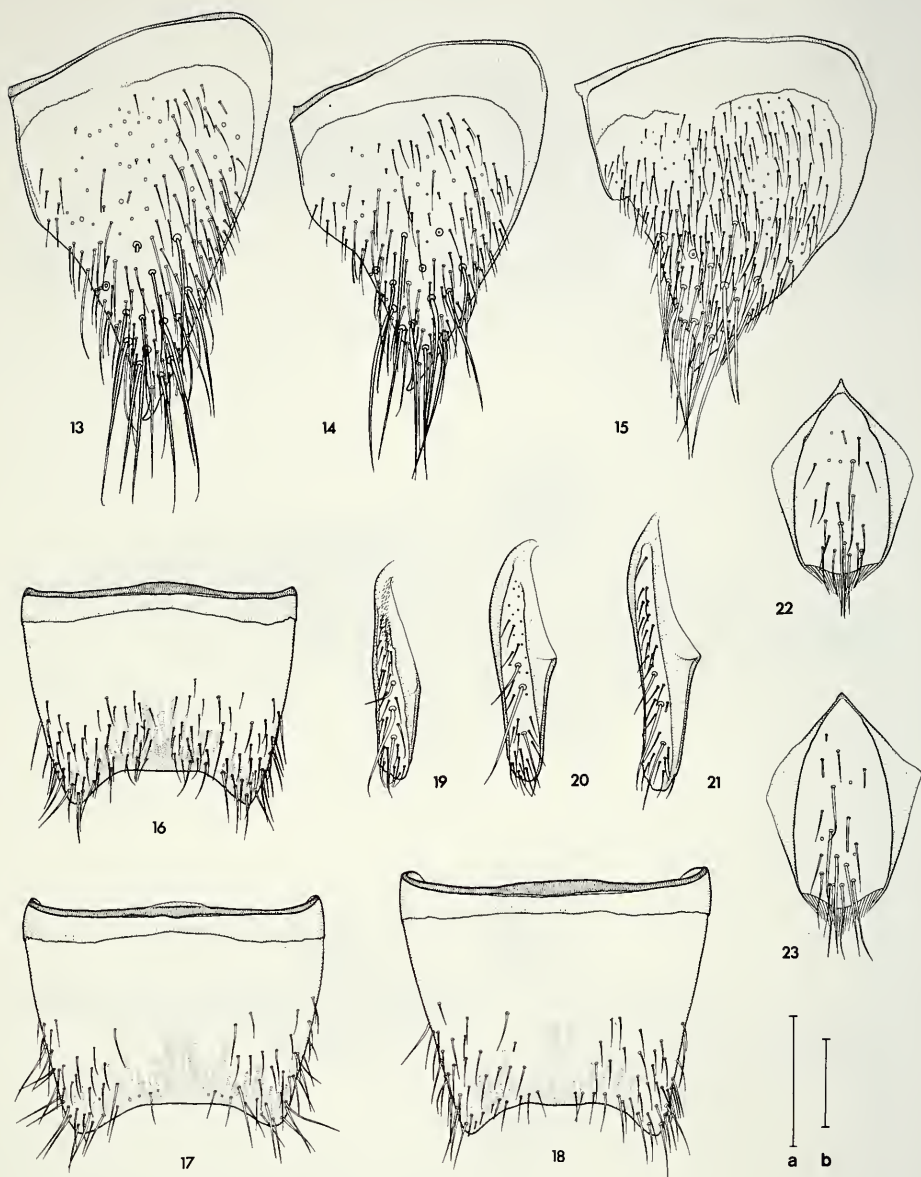
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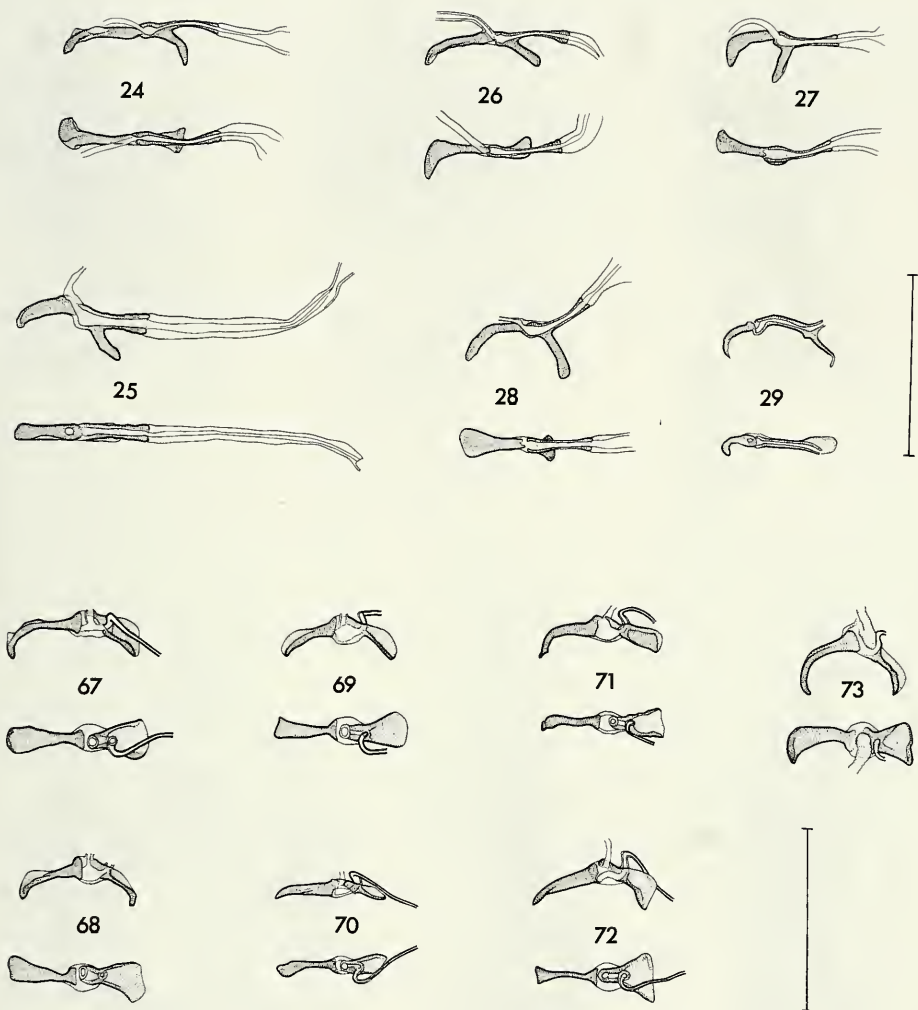
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FIGS 10-12. *Scopaeus siculus*, ♂ lectotype: aedeagus in 10) lateral, 11) ventral, 12) dorsal view. Scale bar = 0.1 mm.



FIGS 13-23. *Scopaeus siculus*, ♀ paralectotype: 13) laterotergite 9, 21) valve, 23) tergite 10. ♂ lectotype: 18) sternite 8. *Scopaeus flavofasciatus*, ♀ paratype: 14) laterotergite 9, 20) valve, 22) tergite 10. ♂ holotype: 16) sternite 8. *Scopaeus gracilis*, ♀ paralectotype of *S. trossulus*: 15) laterotergite 9, 19) valve. *Scopaeus gracilis*, Greece, Peloponnese: 17) ♂ sternite 8. Figs 13-15, 19-23: scale bar a), figs 16-18: scale bar b), scale bars = 0.1 mm.



FIGS 24-29. Spermatheca: 24) *Scopaeus flavofasciatus*, ♀ paratype. 25) *Scopaeus sculus*, ♀ paralectotype. 26) *Scopaeus gracilis*, ♀, Germany, Hesse. 27), 28) *Scopaeus gracilis*, ♀, Teneriffa. 29) *Scopaeus gracilis*, ♀ paralectotype of *S. trossulus*. Scale bar = 0.1 mm.

FIGS 67-73. Spermatheca: 67), 68), 69) *Scopaeus micropterus*, ♀, Italy, Emilia. 70) *Scopaeus alaschiacus*, ♀ paratype. 71) *Scopaeus minutoides*, ♀, Turkey, Antalya. 72) *Scopaeus championi*, ♀, Austria, Lech river. 73) *Scopaeus gladifer*, ♀ paratype. Scale bar = 0.1 mm.

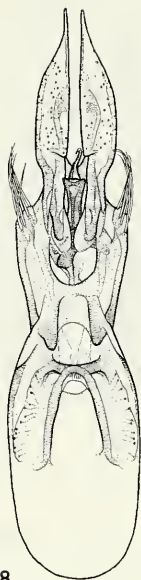




FIGS 30-36. *Scopaeus micropterus*, ♂, Italy, Urbino: aedeagus in 30) lateral, 31) ventral, 32) dorsal view. *Scopaeus championi*, ♂, Austria, Lech river: aedeagus in 33) lateral view. ♂, Bosnia-Herzegovina, Sarajevo: aedeagus in 34) lateral, 35) ventral, 36) dorsal view. Scale bar = 0.1 mm.



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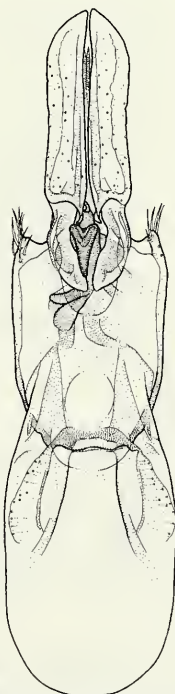
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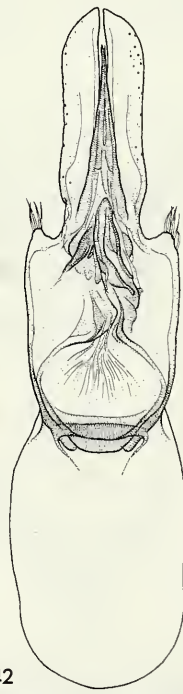
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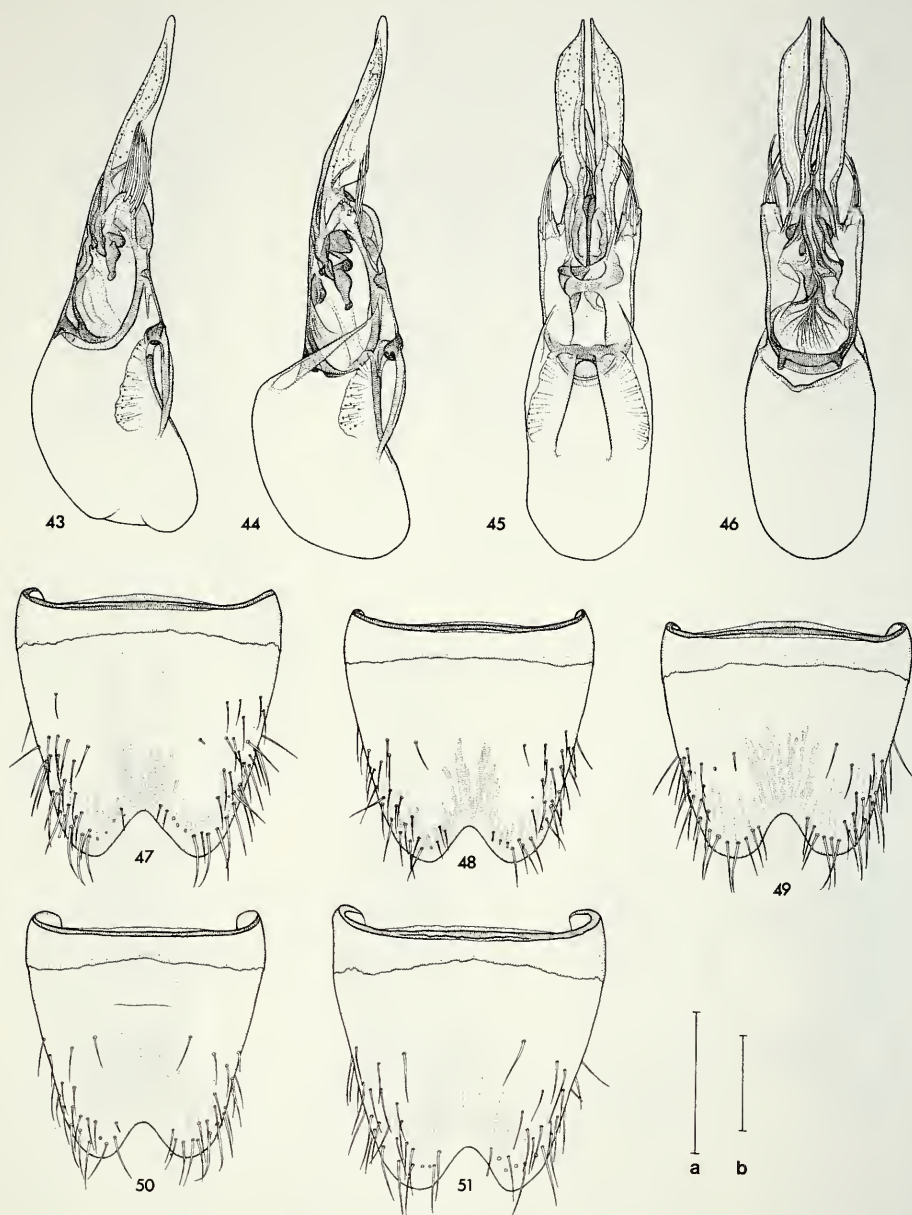


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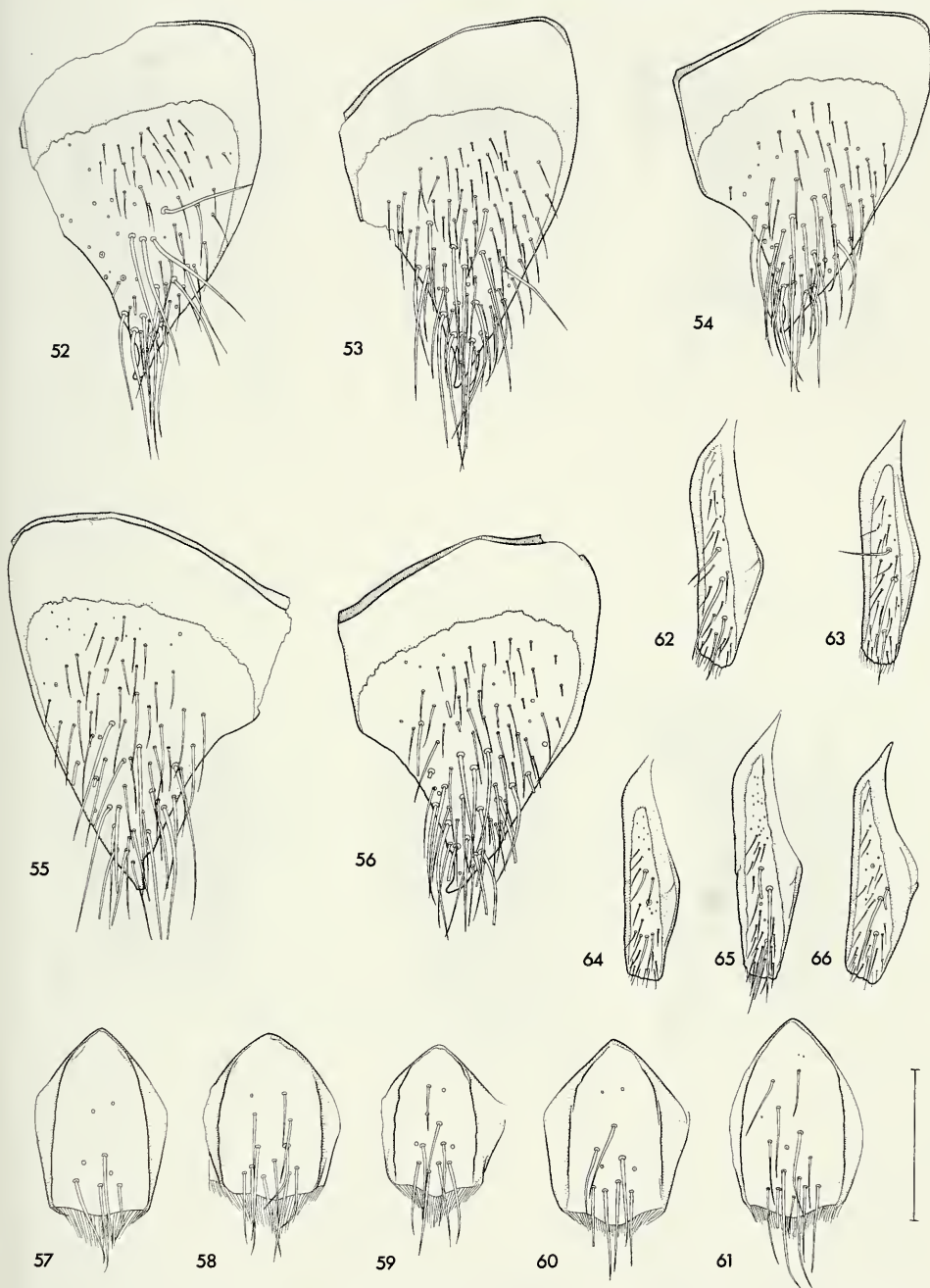
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FIGS 37-42. *Scopaeus alaschiacus*, ♂ holotype: aedeagus in 37) lateral, 38) ventral, 39) dorsal view. *Scopaeus gladifer*, ♂ holotype: aedeagus in 40) lateral, 41) ventral, 42) dorsal view. Scale bar = 0.1 mm.

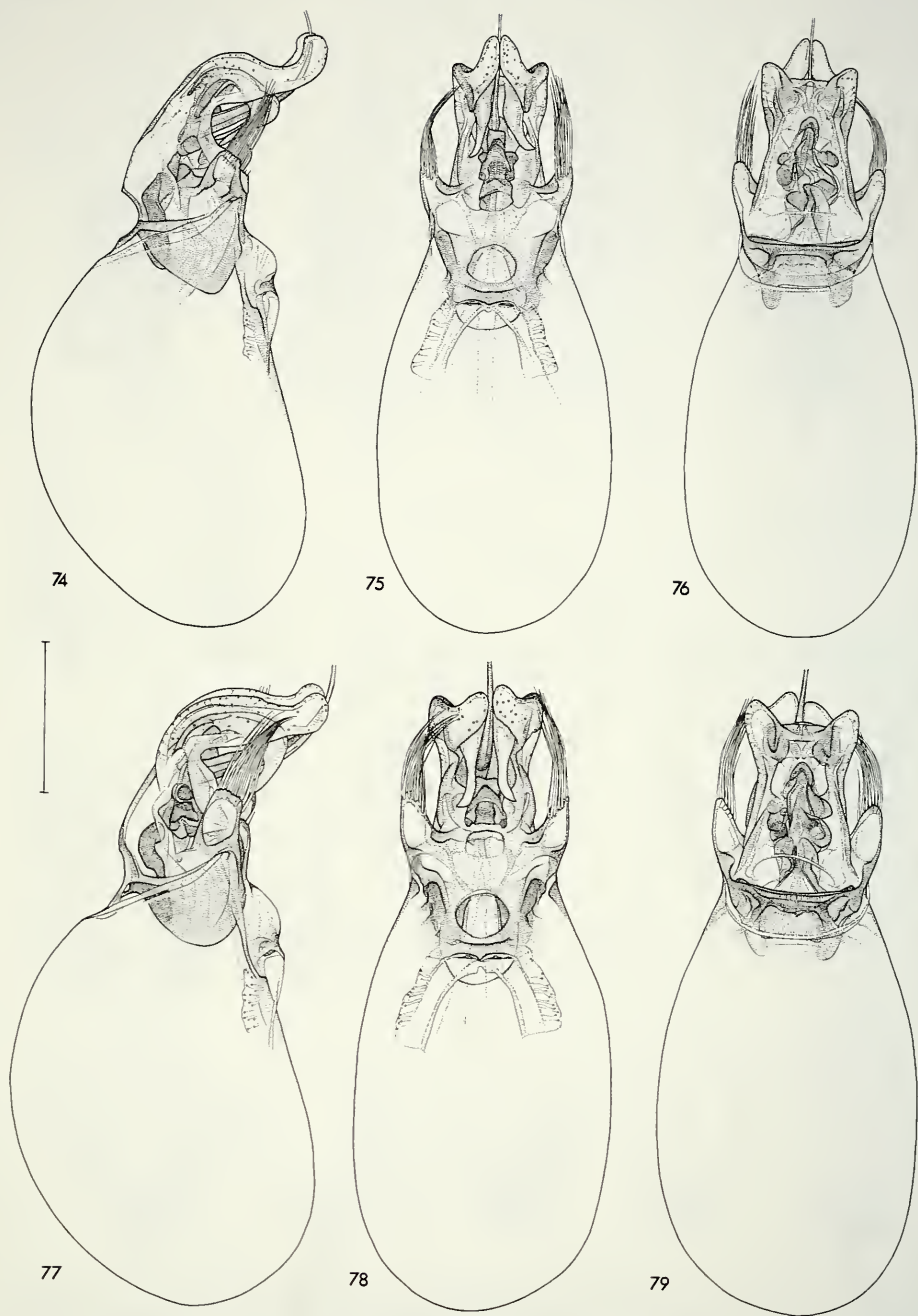


FIGS 43-51. *Scopaeus minutoides*, ♂ holotype: aedeagus in 43) lateral view. ♂, Turkey, Istanbul: aedeagus in 44) lateral, 45) ventral, 46) dorsal view. ♂ sternite 8: 47) *Scopaeus micropterus*, Italy, Urbino. 48) *Scopaeus championi*, Bosnia-Herzegovina, Sarajevo. 49) *Scopaeus alaschiacus*, holotype. 50) *Scopaeus minutoides*, holotype. 51) *Scopaeus gladifer*, holotype. Figs 43-46: scale bar a), figs 47-51: scale bar b), scale bars = 0.1 mm.

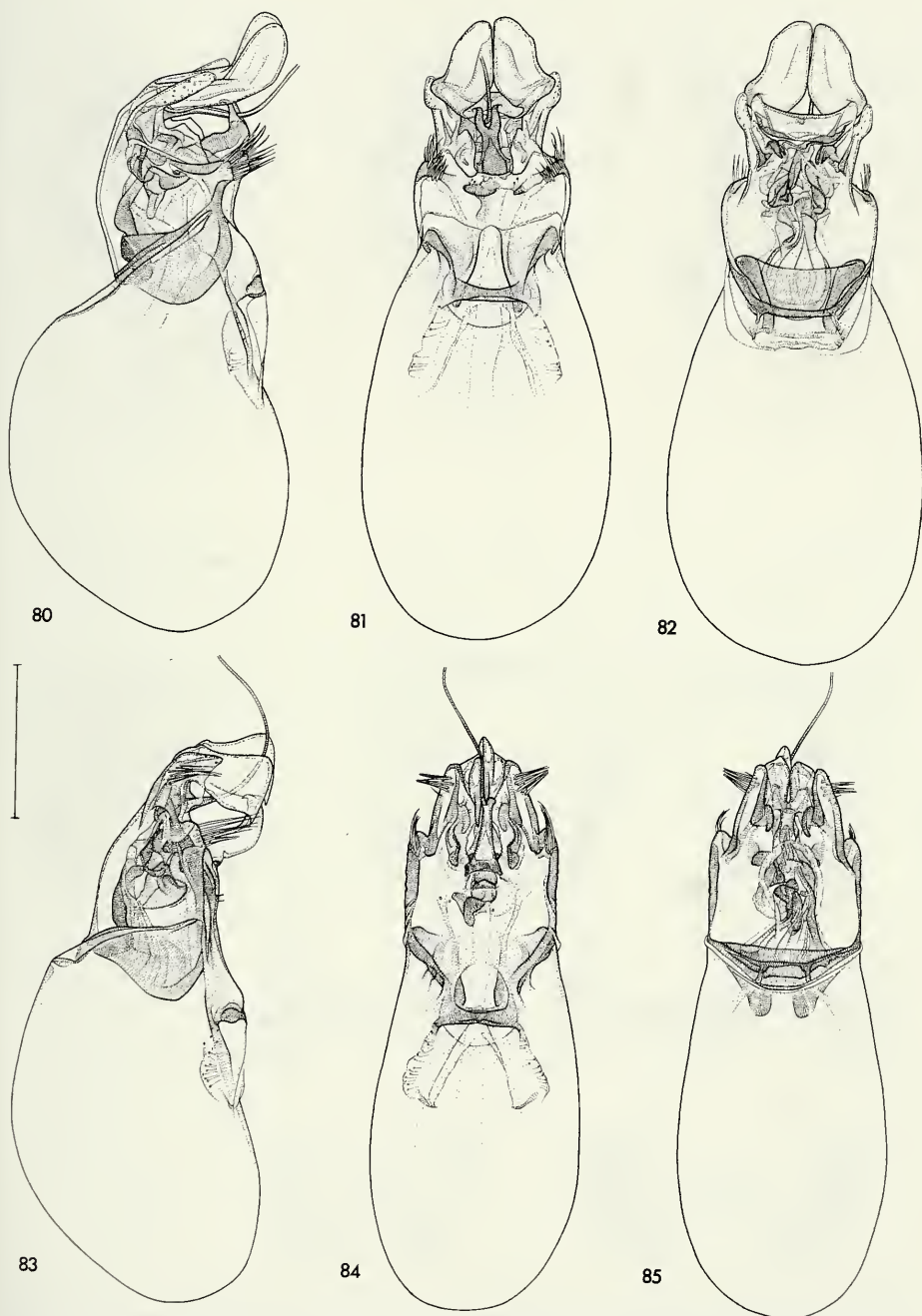




FIGS 52-66. *Scopaеus micropterus*, ♀, Italy, Emilia: 52) laterotergite 9, 57) tergite 10, 62) valve. *Scopaеus championi*, ♀, Austria, Lech river: 53) laterotergite 9, 58) tergite 10, 63) valve. *Scopaеus alaschiacus*, ♀ paratype: 54) laterotergite 9, 59) tergite 10, 64) valve. *Scopaеus gladifer*, ♀ paratype: 55) laterotergite 9, 61) tergite 10, 65) valve. *Scopaеus minutoides*, ♀, Turkey, Istanbul: 56) laterotergite 9, 60) tergite 10, 66) valve. Scale bar = 0.1 mm.

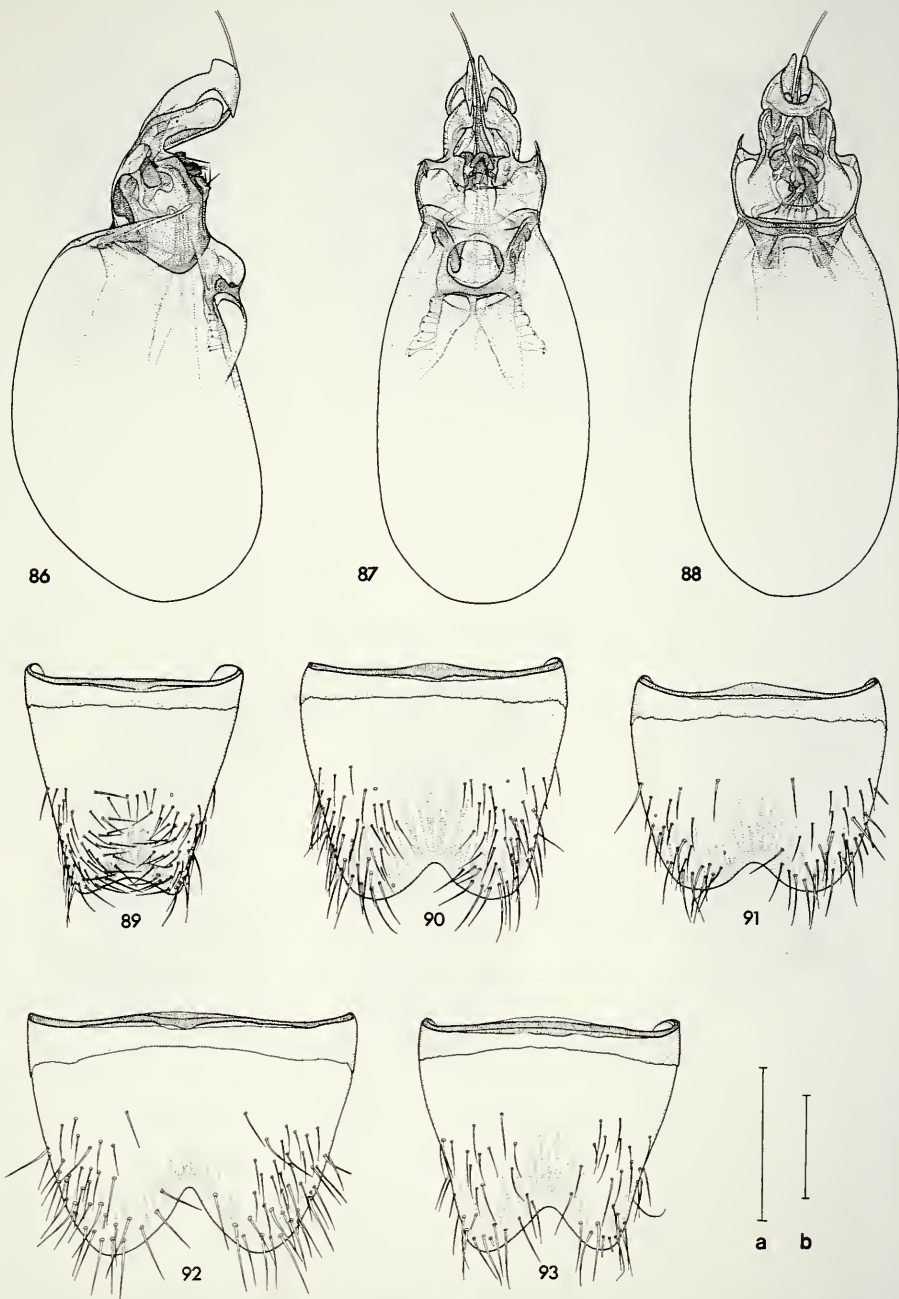


FIGS 74-79. *Scopaes minimus*, ♂ Hungary, Neusiedler See: aedeagus in 74) lateral, 75) ventral, 76) dorsal view. *Scopaes palaestinus*, ♂ holotype: aedeagus in 77) lateral, 78) ventral, 79) dorsal view. Scale bar = 0.1 mm.

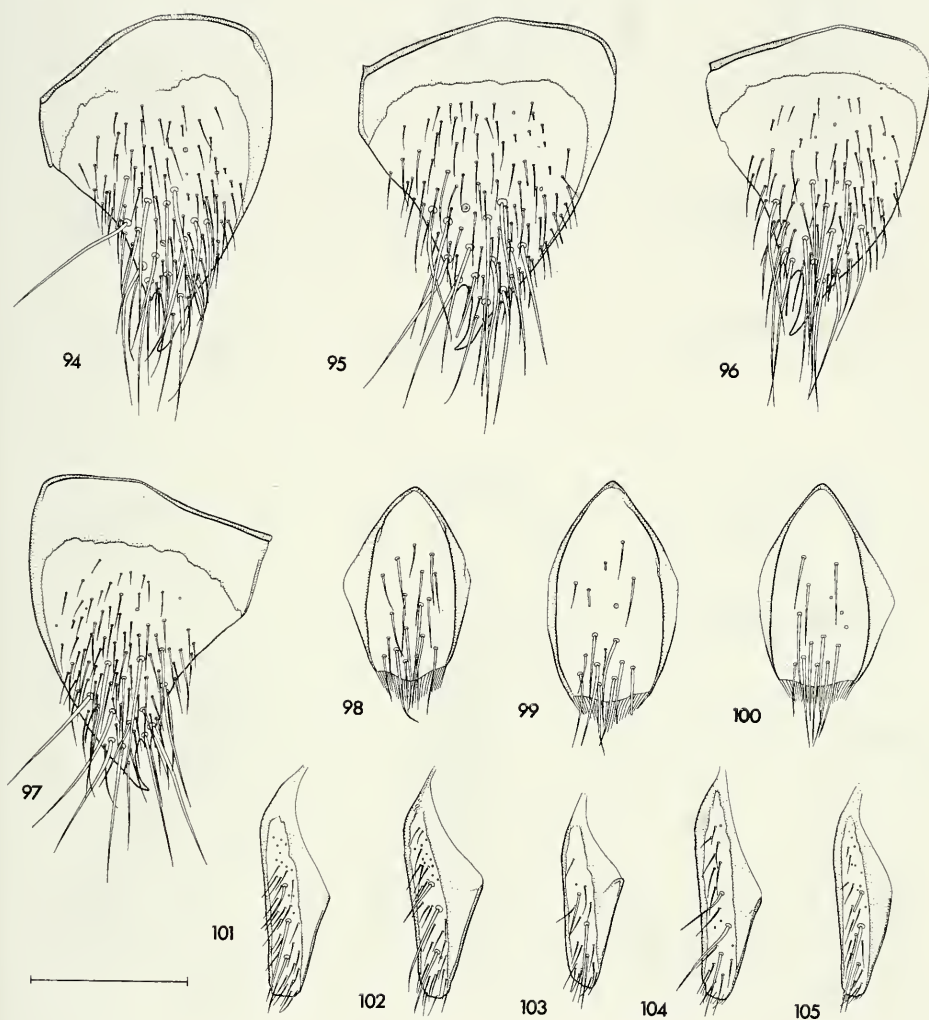


FIGS 80-85. *Scopaeus ryei*, ♂, Austria: aedeagus in 80) lateral, 81) ventral, 82) dorsal view. *Scopaeus brevicuspis*, ♂ paratype: aedeagus in 83) lateral, 84) ventral, 85) dorsal view. Scale bar = 0.1 mm.





FIGS 86-93. *Scopaesus littoralis*, ♂ holotype: aedeagus in 86) lateral, 87) ventral, 88) dorsal view. ♂ sternite 8: 89) *Scopaesus ryei*, Austria. 90) *Scopaesus brevicuspis*, paratype. 91) *Scopaesus littoralis*, holotype. 92) *Scopaesus palaestinus*, holotype. 93) *Scopaesus minimus*, Hungary, Neusiedler See. Figs 86-88: scale bar a), figs 89-93: scale bar b), scale bars = 0.1 mm.



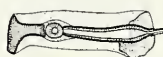
FIGS 94-105. *Scopaes minimus*, ♀, Hungary, Neusiedler See: 94) laterotergite 9, 98) tergite 10, 101) valve. *Scopaes palaestinus*, ♀, paratype: 95) laterotergite 9, 99) tergite 10, 102) valve. *Scopaes littoralis*, ♀ paratype: 96) laterotergite 9, 105) valve. *Scopaes brevicuspis*, ♀ paratype: 104) valve. *Scopaes ryei*, ♀, Austria: 97) laterotergite 9, 100) tergite 10, 103) valve. Scale bar = 0.1 mm.



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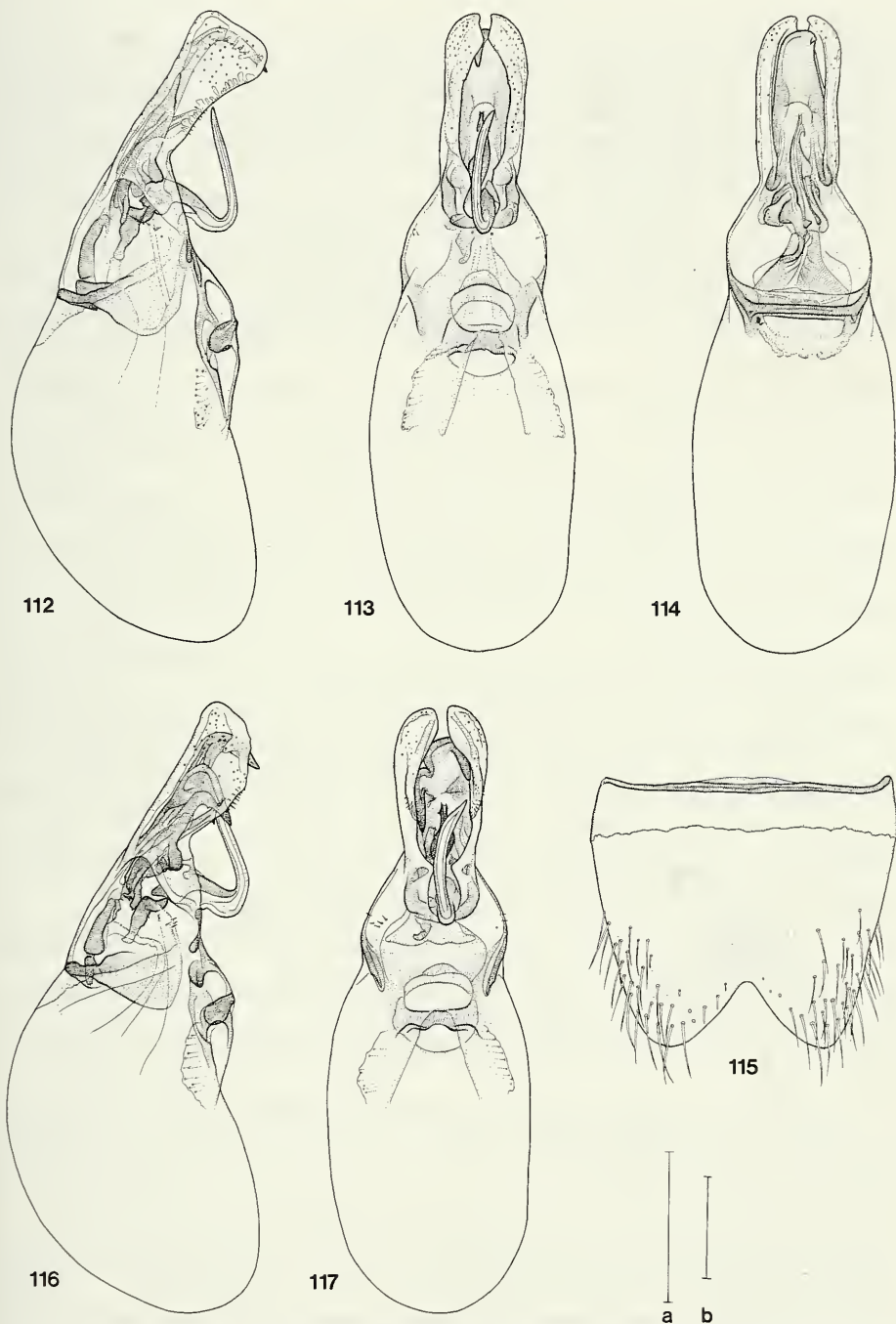


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FIGS 106-111. Spermatheca: 106) *Scopaeus minimus*, ♀, Hungary, Neusiedler See. 107), 108) *Scopaeus palaestinus*, ♀ paratype. 108) *Scopaeus ryei*, ♀, Austria. 110) *Scopaeus brevicuspis*, ♀ paratype. 111) *Scopaeus littoralis*, ♀ paratype. Scale bar = 0.1 mm.





FIGS 112-117. *Scopaes hercegovinensis* sp. n., ♂ holotype: aedeagus in 112) lateral, 113) ventral, 114) dorsal view, 115) sternite 8. *Scopaes haemusensis*, ♂ holotype: aedeagus in 116) lateral, 117) ventral view. Figs 112-114, 116-117: scale bar a), fig. 115: scale bar b), scale bars = 0.1 mm.

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